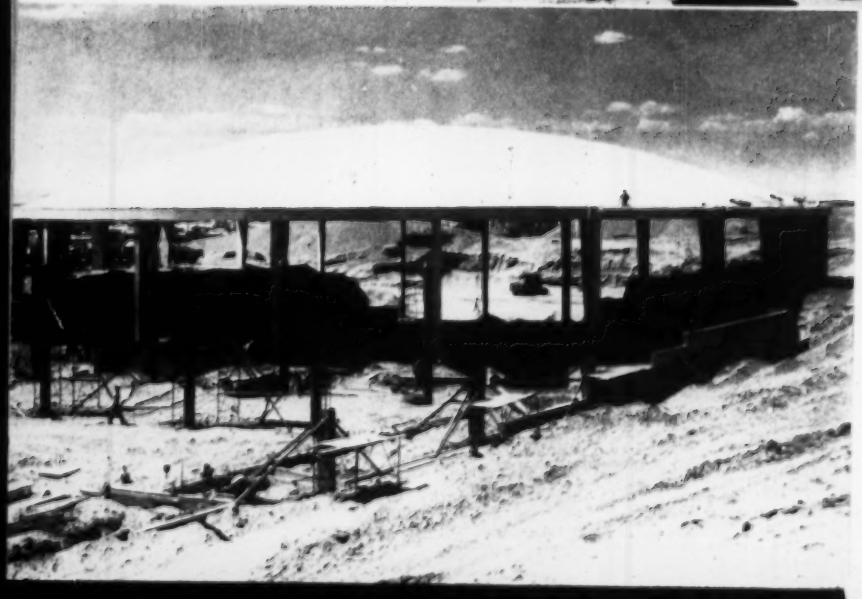
ENGINEERING NEWS-RECORD

Concrete dome built on a mound . . .



. . . becomes a roof when scooped out p. 36

A McGRAW-HILL PUBLICATION

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S B POWER
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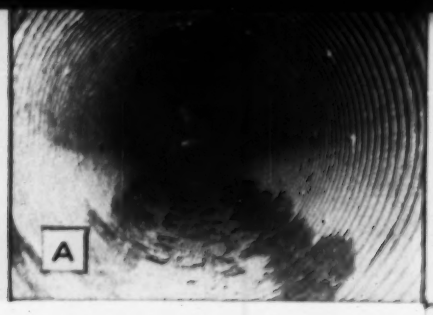
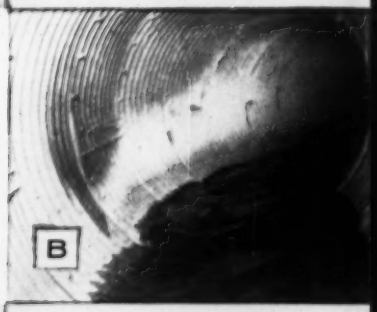


LEFT: This 36-inch-diameter Armco Sewer was recently inspected in a mountain city.

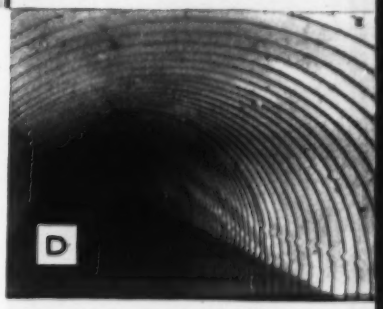
WHICH ARMCO SEWER HAS BEEN INSTALLED 49 Years?



ABOVE: Large diameter Armco Sewer installed in a midwest city.

Hard to tell, isn't it?

LEFT: This Armco Storm Sewer in a midwest city is of 14-gage, 36 inches in diameter.



ABOVE: A large southern city installed this 30-inch-diameter Armco Sewer Structure.

Actually, you can't tell the age of an Armco Sewer just by looking at it. Armco Corrugated Metal Sewer Structures have an outstanding record for long, economical and efficient service.

But in case you are wondering, Armco Sewer (A) has been in service 39 years; sewer (B), 26 years; sewer (C), 19 years; and sewer (D), 23 years. How close did you guess?

Long life is not the only advantage of Armco Sewer Structures: Corrugated metal design provides ample strength for any loading condition. Long lengths speed up installation. Sturdy coupling bands assure tight joints and a continuous conduit. Choice of protective coatings and pavements solves corrosion and erosion problems. Wide size range meets capacity requirements. And unskilled labor can handle the job, saving money at every step.

Write now for complete data on your specific needs. Armco Drainage & Metal Products, Inc., 5156 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

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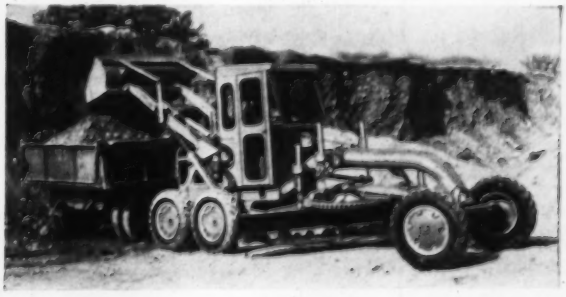

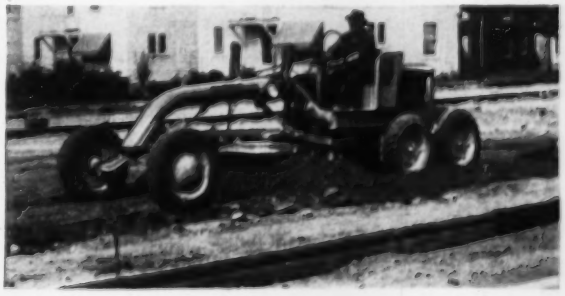

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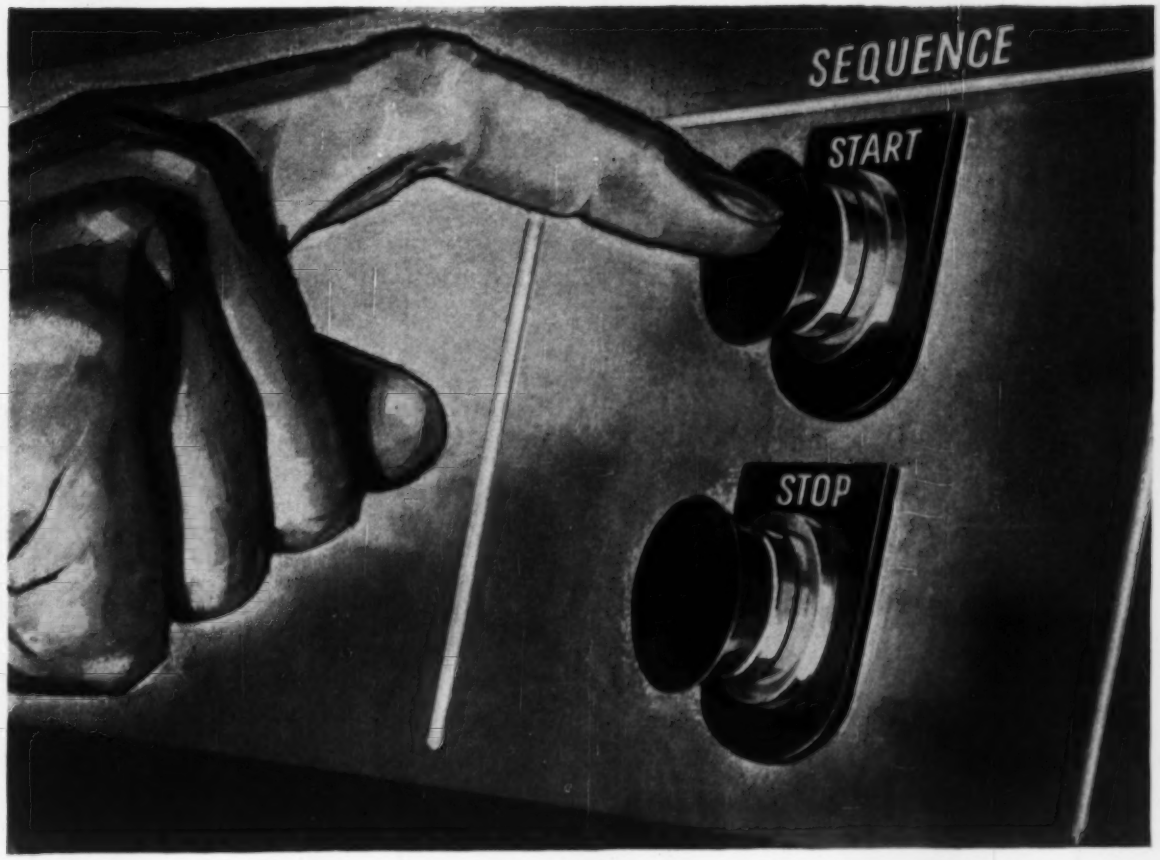

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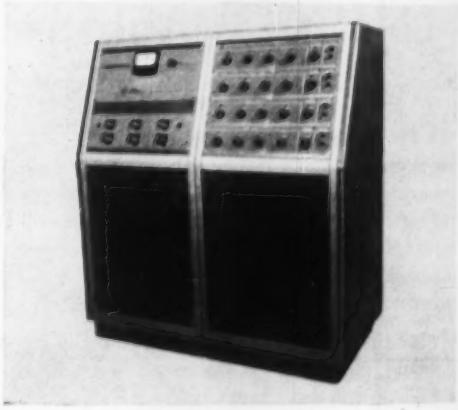

Batchetron control console.

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encloses field house at Haverford

At Haverford College, Haverford, Pa., a huge building enclosed in Alcoa Industrial Building Sheet, in color, is nearing completion. This is the college's new field house, covering nearly an acre and a third. It will be a highly attractive, completely functional structure. Much of its appeal results from an exclusive new Alcoa Aluminum product line . . . Industrial Building Products in color.

This new color is a soft, harmonious green . . . long-lasting, sunfast. It is the result of a joint development of Alcoa and American Chemical Paint Company, called Architectural Alodine*. The color finish is chemically a part of the metal surface. It adds new beauty to the appearance of the metal and improves its natural resistance to weathering and industrial fumes.

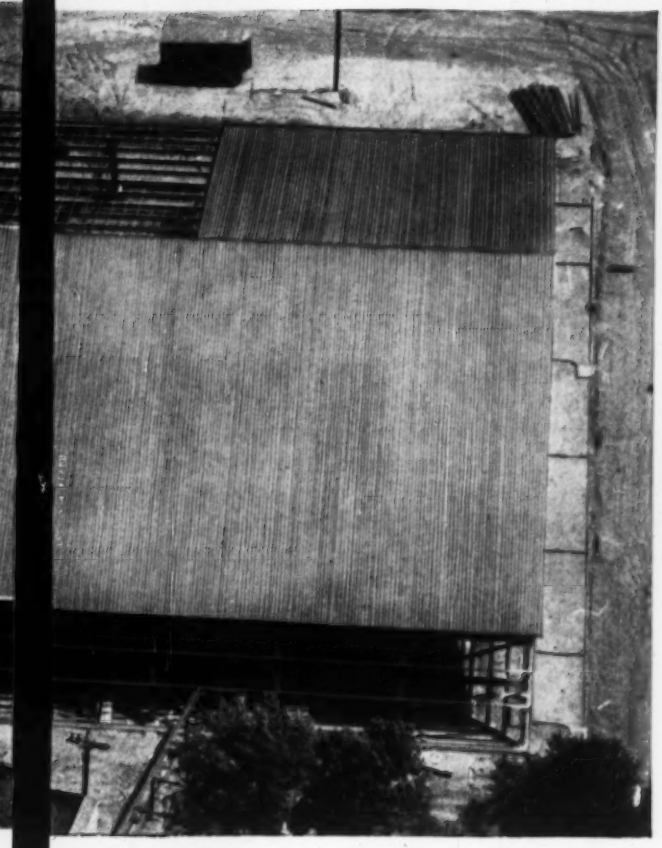
Aluminum was a natural choice for this building. The immense roof area, supported on rigid bent trusses, weighs far less than a conventional roof. Its design provides unobstructed clear areas for 85% of the sports activities of the college.

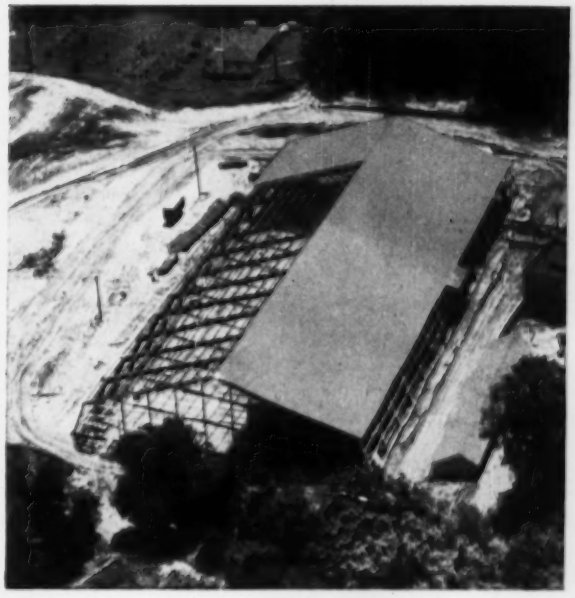
Both the roof area and walls are constructed of Architectural Alodine colored V-Beam sheet fastened to the steel framing. Low cost, handsome appearance and speed of erection as well as light weight governed the selection of Alcoa Aluminum.

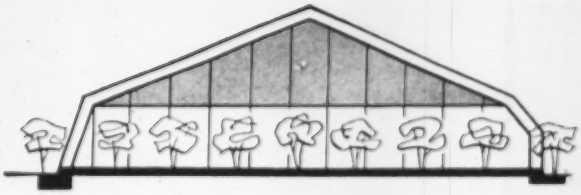
In addition, there will be virtually no exterior maintenance. Foundation and framing costs were lower.

FREE SAMPLE

Your nearby Alcoa sales office has the complete story on Alcoa Industrial Building Products in the new "sea-green" color. They will also be happy to put you in touch with selected Alcoa Approved Applicators who offer a complete service in the supply and erection of these low-cost industrial building materials. If you







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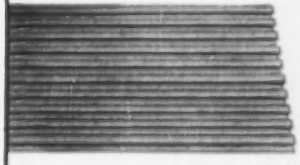
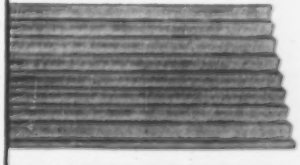


Alcoa Ribbed Sheet



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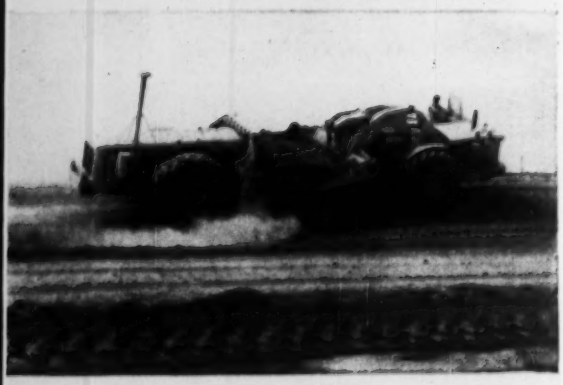
ALTERNATE SUNDAY EVENINGS

TS-18 "Eucs"

TWIN-POWER SCRAPERS get more work done... *faster*

Twin-Power—two engines driving separate axles—was pioneered by Euclid 10 years ago. Torque converters and semi-automatic transmissions assure easy operation and a smooth flow of power matched to any job condition. The TS-18 is powered by two 218 h.p. engines with a 300 h.p. engine for the tractor available for work where maximum power can be used. Standard tires are 27.00 x 33 with 33.5 x 33 as optional. Harris Construction Company's "Twins" are TS-18 Specials with 518 h.p. and the larger tires.



With a total of 518 h.p.—300 h.p. in the tractor and 218 h.p. in the scraper—Harris' TS-18 Specials really made the dirt fly and completed the Glasgow Air Force Base grading weeks ahead of schedule.

Harris Construction Co. of Aberdeen, S. D. recently set a new record for earthmoving on Montana highway work with a fleet of six TS-18 Euclid Scrapers. In a six-day work week these "Eucs" moved 90,000 cu. yds. on a half million yd. road contract near Nashua on Route 2. They worked 10 hours a day—self loaded gravel, clay and shale without pusher tractors—on hauls averaging 1500 ft. Most of the time each machine worked alone making shallow cuts and fills on sections of the 13-mile job.

At nearby Glasgow Air Force Base, Harris used his original fleet of four TS-18 "Eucs" to move most of the 1,200,000 yds. of gumbo. Working two 10-hour shifts 6 days a week, each scraper averaged 69,000 yds. a month. Performance of the "Twins" on this air base job was so outstanding that 2 more were added to the Euclid fleet—and Harris has disposed of 8 other scrapers and 5 crawler tractors.

With two jobs only 26 miles apart the mobility and independence of the TS-18 Scrapers proved a big advantage. They moved from air base to road job and back again—as conditions required—in about an hour. There was no problem or expense in moving pusher tractors because none were needed at either job. And when a few loads of sand or gravel were needed for culverts or other use, a "Twin" or two took off for the nearest pit and did the job in a hurry.

Owner Ken Harris has found the Twin-Power Scraper the most efficient dirt mover he's ever used. His fleet with job availability of 95% has more than lived up to his expectations in production and low cost yardage. That's why he tells visitors to his jobs, "When I buy additional haulage equipment it'll be TS-18 'Eucs' ".

For information on the complete line of Euclid earthmoving equipment, call your Euclid dealer—he can show you why *Euclids are your best investment.*

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See you at the ROAD SHOW CHICAGO Jan. 28-Feb. 2, 1957
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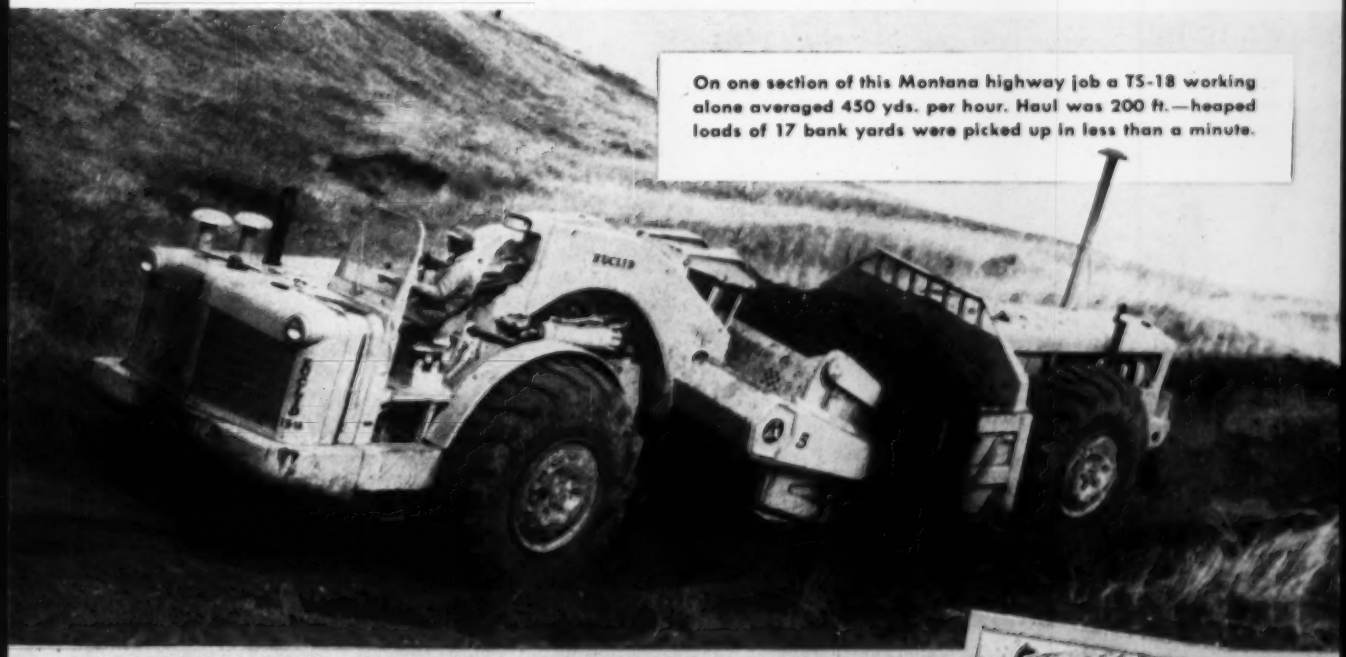
EUCLID DIVISION, GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

set new earthmoving records

. . . complete tough jobs way ahead of schedule



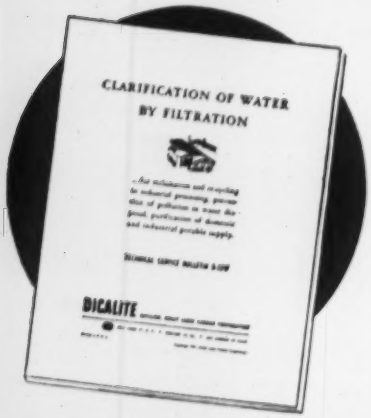
On one section of this Montana highway job a TS-18 working alone averaged 450 yds. per hour. Haul was 200 ft.—heaped loads of 17 bank yards were picked up in less than a minute.

The 33.5 x 33 tires and NoSpin differentials of the TS-18 Specials provided the tremendous traction needed for self-loading the heavy gumbo and gravel and made efficient use of the 518 total h.p. on both of the Montana jobs.

Ken Harris, head of Harris Construction Co. in South Dakota, says "the complete independence of the 'Twin' is revolutionizing road building on many jobs where concentration of equipment in any single cut is not practical." He's standardized on the TS-18 Special for his earth-moving equipment.

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE



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Reader Comment

Paraboloidal Perplexity

SIR—When space permits, would you please have your mathematical advisors differentiate between a hyperbolic paraboloid—mentioned on page 19 of your unusually excellent issue of Sept. 6—and the more familiar hyperboloid and paraboloid.

J. H. KAISER
Syracuse, N. Y.

[EDITOR'S NOTE—One familiar paraboloid is the surface generated by a parabola rotated about its axis. Similarly, an "unparted" hyperboloid is generated by a hyperbola rotated about its imaginary axis. The hyperbolic paraboloid, however, is a saddle-shaped surface containing both parabolas and hyperbolas. Its general equation can be written in the form $x^2/a^2 - y^2/b^2 = cz$, but most likely surfaces used in construction will be of the simplified type, $z = kxy$. Certain families of planes intersect the surface in straight lines, making possible simple formwork. A builder can form the surface with straight members. (Also see ENR's next issue.)]

Fine Compliment

SIR—Your notice of the expiration of subscription to Engineering News-Record has just been received.

Mr. Murray passed on last October. He never would have let his subscription lapse in his lifetime. He had all the copies from 1888 to the time of his death, all in good order. The ones from 1888 to 1935 are nicely bound. They now are for sale.

MRS. RAY MURRAY
1638 *Interlaken Boulevard*
Seattle 2, Washington

Credit for Stone

SIR—The article, "Stone—New Look in Sandwich Panels," in ENR Aug. 16, was of great interest to us. We do, however, regret that nowhere in the article was any mention made of the General State Authority's role as the financing and building agency of the Commonwealth of Pennsylvania, which produced the two state office buildings at Harrisburg. GSA is now launching a similar project in Philadelphia and also is building a state office building in Pittsburgh.

The authority is the "owner" of these buildings, until an amount equal to their cost has been paid to the GSA as rental by the State Department of Property and Supplies. The Commonwealth does not "own" the buildings, as your article stated, until this total building cost has been amortized.

GEORGE A. CRAGO
Public Relations Officer
The General State Authority
Harrisburg, Pa.

Engineering News-Record welcomes expression of opinion from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance.

Letters should be addressed: Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

Story Source

SIR—I was highly complimented at finding in my copy of the August 23 issue of Engineering News-Record an article on pages 48 and 51, entitled "Cincinnati's Planning Pays Dividends: City's Road System Grows."

A comparison of the two maps—the one in your article and the one in our CDC Bulletin (Vol XIII, No. 1) that contained the 13th annual report by CDC President Howard J. Morgens—indicates that your article was based upon the bulletin report of our committee's activities during the past year.

I was surprised to find no credit reference.

GEORGE C. HAYWARD
Executive Secretary
Citizens Development Committee
Cincinnati 2, Ohio

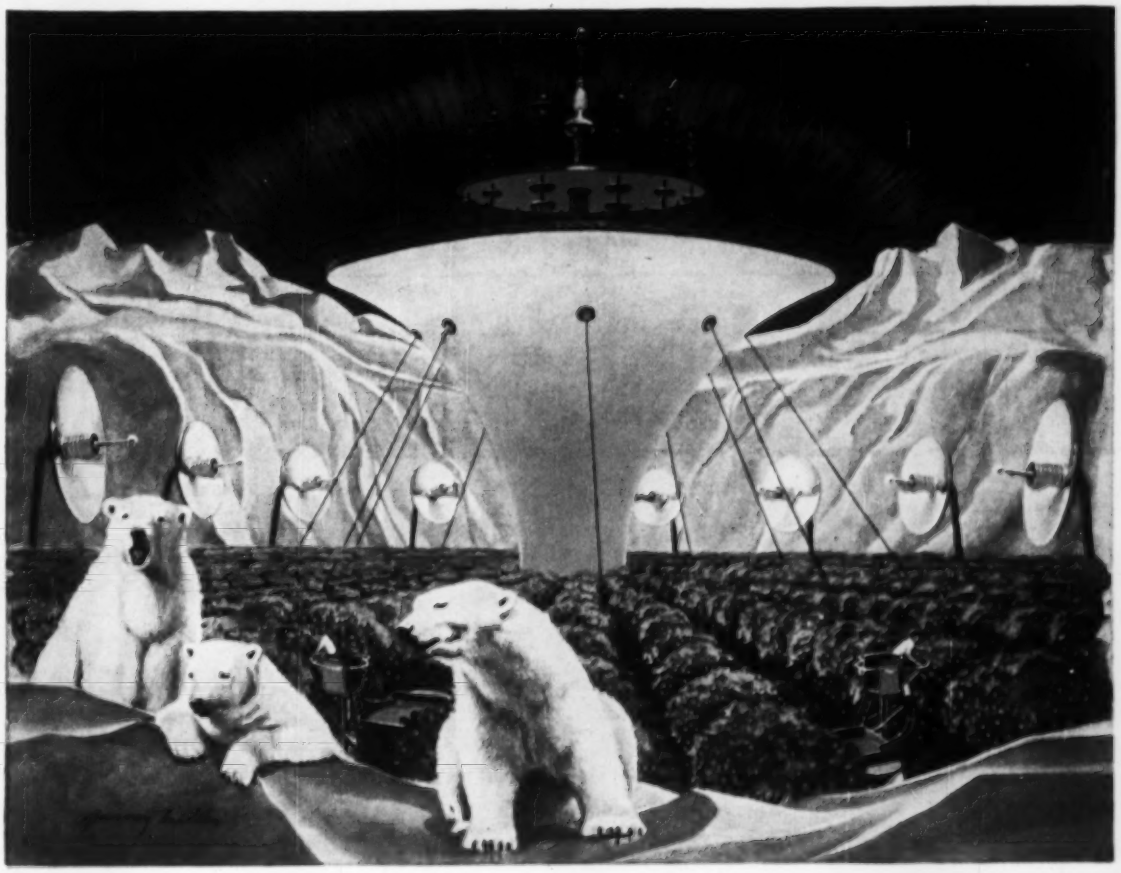
[EDITOR'S NOTE—Though our correspondent used several sources, including newspapers and personal interviews, a portion, at least, of the information presented should be credited to Mr. Hayward's fine organization.]

PG&E's Part in Tri-Dam

SIR—The story of the Tri-Dam project (ENR Aug. 16, p. 40) gives gratifying recognition to the importance of the planning part of a water power project as distinguished from the construction phase.

The value of the federal-owned power sites in upper Stanislaus Basin has long been recognized, and investigations which laid the groundwork for the current construction were acomplished many years ago. To some extent this work was done by federal agencies but the engineers of the Pacific Gas & Electric Co. deserve principal credit.

The irrigation districts came into the



Huge solar engines imprisoning the heat of the sun may create islands of fertility in icy wastelands, thus vastly increasing the productive food areas of the earth.

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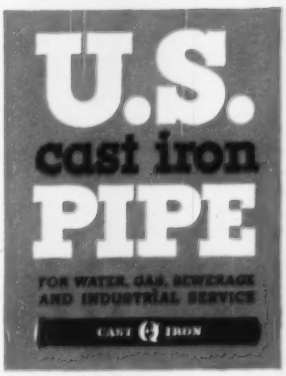

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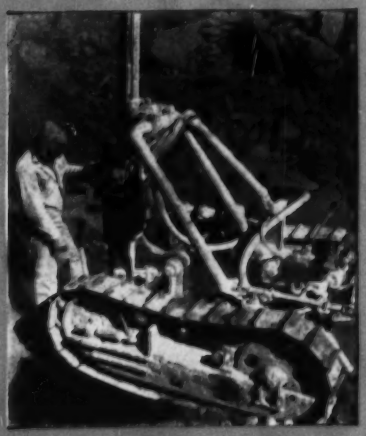

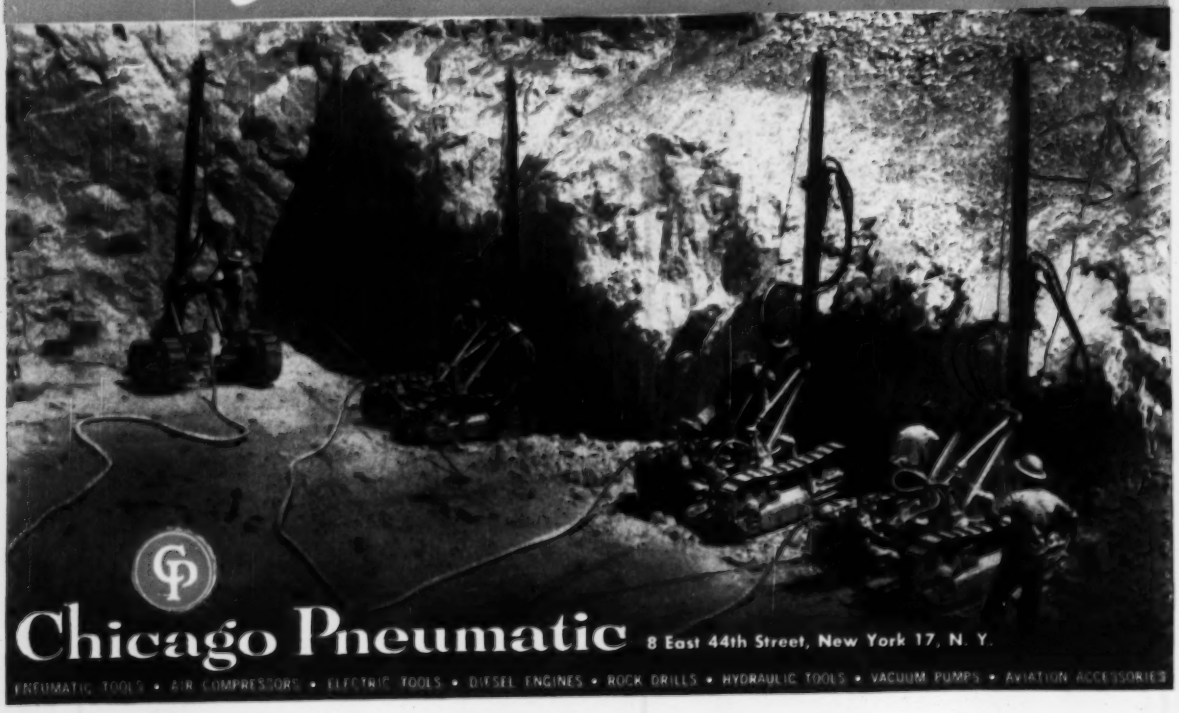

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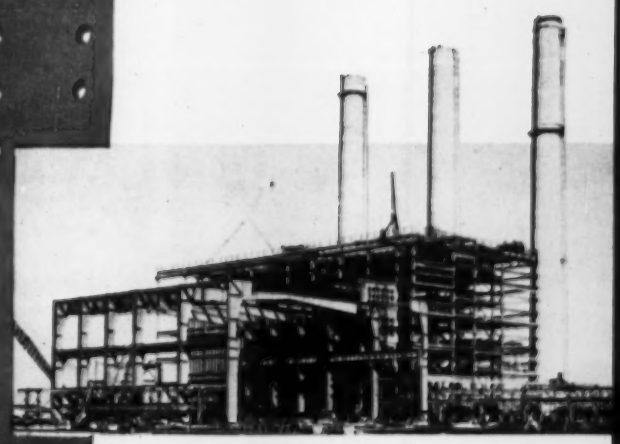

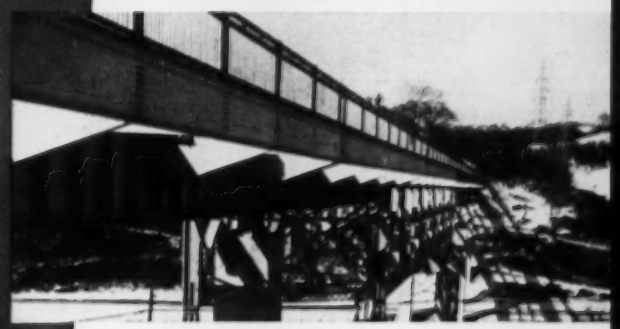

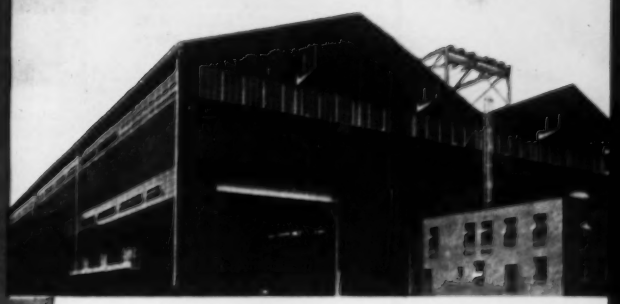

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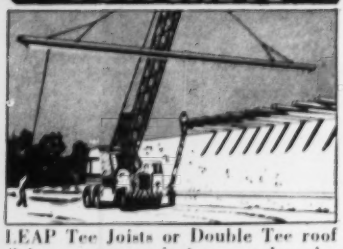

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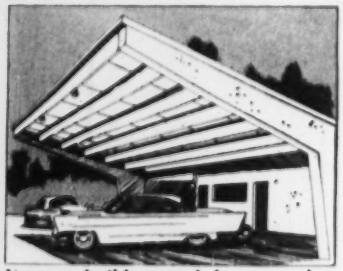

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- **Prestressed Concrete, Inc.** Lakeland, Florida
- **Pretensados Venezolanos C. A.** Caracas, Venezuela, South America
- **Ruby Lumber Co.** Madisonville, Kentucky
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- **Stresscrete, Inc.** Leesburg, Florida
- **Superior Sand & Gravel** Phoenix, Arizona
- **T-Stress, Inc.** Houston 2, Texas
- **Turbotville Block Co., Inc.** Turbotville, Pennsylvania
- **West Coast Shell Corp.** Sarasota, Florida
- **Wilson Concrete Company** Council Bluffs, Iowa
- **R. H. Wright & Son** Fort Lauderdale, Florida

. . . Reader Comment

picture in 1947 when negotiations were initiated which led to the partnership agreement with PC&E. Under this arrangement the company assumed all risks in regard to the volume and variation of future output so that the districts might have acceptable credit for the sale of bonds. Obviously, therefore, important obligations were imposed on PG&E engineers regarding the layout and design of the project. During the period from 1947 to 1951, while I had principal responsibility for working out the project for the districts, valuable advice and directions were provided by I. C. Steele, PG&E chief engineer, and his sucessor Walter Dreyer. Throughout the protracted negotiations in regard to dependable output, alternative plans, reservoir sizes, power plant capacities, etc., H. V. Lutge and Dean Worthington, PG&E engineers, made notable technical contributions in the solution of design problems. Also during this period R. E. Hartley and T. P. Stivers, local engineers of the irrigation districts, rendered conscientious service in supervising exploratory drilling at the damsites and field surveys necessary to supplement the detailed surveys made by the PG&E in 1927 under the direction of Grover Green.

F. E. Bonner
Consulting Engineer
San Francisco

CALENDAR

University of Illinois and Portland Cement Assoc., seven lectures on thin-shell concrete structures, Navy Pier, Chicago, Ill., 7 pm to 9 pm, Oct. 2, 9, 16, 23.

Air Moving and Conditioning Association, Inc., annual meeting, the Greenbrier, White Sulphur Springs, W. Va., Oct. 2-4.

Federation of Sewage and Industrial Wastes Associations, annual convention, Hotel Statler, Los Angeles, Calif., Oct. 8-11.

Noise Abatement Symposium, seventh annual meeting, Hotel Sherman, Chicago, Ill., Oct. 11-12.

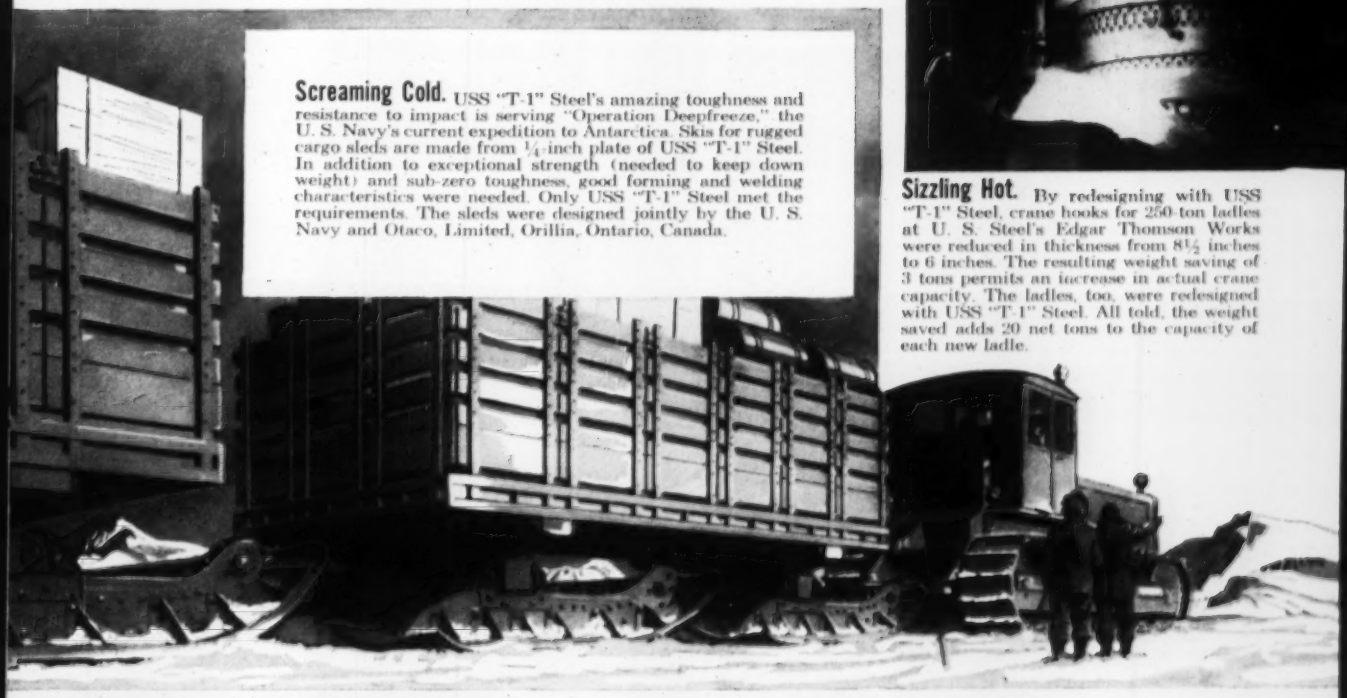
Sixth Annual Drilling Symposium, The University of Minnesota, Minn., October 11, 12, 13, 1956.

Rail Steel Bar Association, fall meeting, Sheraton-Mount Royal Hotel, Montreal, Canada, Oct. 15-16.

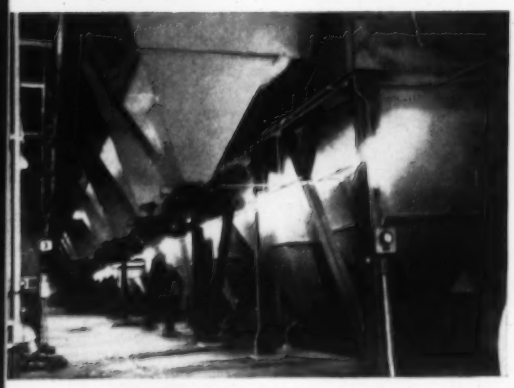
American Society of Civil Engineers, annual convention, Wm. Penn Hotel, Pittsburgh, Pa., Oct. 15-19.

HOW USS "T-1" STEEL IMPROVES THESE PRODUCTS:

Sizzling Hot. By redesigning with USS "T-1" Steel, crane hooks for 250-ton ladles at U. S. Steel's Edgar Thomson Works were reduced in thickness from 8½ inches to 6 inches. The resulting weight saving of 3 tons permits an increase in actual crane capacity. The ladles, too, were redesigned with USS "T-1" Steel. All told, the weight saved adds 20 net tons to the capacity of each new ladle.



Screaming Cold. USS "T-1" Steel's amazing toughness and resistance to impact is serving "Operation Deepfreeze," the U. S. Navy's current expedition to Antarctica. Skis for rugged cargo sleds are made from ¼-inch plate of USS "T-1" Steel. In addition to exceptional strength (needed to keep down weight) and sub-zero toughness, good forming and welding characteristics were needed. Only USS "T-1" Steel met the requirements. The sleds were designed jointly by the U. S. Navy and Otaco, Limited, Orillia, Ontario, Canada.



28 Million Pounds of wet, abrasive coal are handled each day at this steam-electric generating station. And USS "T-1" Steel is being used at points of severe wear in coal chutes and hoppers, pulverizer feed pipes and exhaust pipes, and for liners of ash collectors. USS "T-1" Steel's durability under impact and impact abrasion, its great tensile strength and its good weldability are often essential in rugged coal handling equipment. USS "T-1" Steel can add service life and cut repair and maintenance costs in many types of heavy-duty equipment.

Repair Reduces Downtime. In this coal stripping operation, time costs more than any other item; and *lost* time, caused by breakage and wear of power shovel parts, was costing far too much. So the owner, Putnam & Greene, Inc., Philipsburg, Pennsylvania, started using USS "T-1" Steel for repair work. As a result, size and weight of parts have been reduced, while durability has been improved substantially. What's more, USS "T-1" Steel's good weldability speeds repair work.

How It Can Help You

USS "T-1" Steel, with its high minimum yield strength of 90,000 psi and its minimum tensile strength of 105,000 psi, can help you design or build lighter-weight equipment that will last longer. Its unusual toughness can help you design or build equipment capable of taking heavy impact and abuse at sub-zero temperatures. Its excellent weldability can help you cut the cost of fabricating highly stressed parts, and to reduce repair and maintenance expense. Its good creep rupture strength can help you put more durability in equipment that operates at temperatures as high as 900 degrees F.

Somewhere in your operation, versatile USS "T-1" Steel can help you. Write, wire, or phone United States Steel, Room 5438, Pittsburgh 30, Pa.

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1947 . . . the Barber-Greene Loader photographed when it started cutting costs for Lake Shore Sand & Stone Co. in Milwaukee.

1956 . . . the same loader still going strong after nine years of hard use . . . still saving loading time and costs.

"Our Barber-Greene has loaded a half million tons with no appreciable wear!"

H. F. Runkle, Vice President, Lake Shore Sand & Stone Co., Milwaukee

In his 40 years' experience in the sand and gravel business, Mr. Runkle reports that "nothing can equal a Barber-Greene for stockpile loading."

"We bought our newest B-G Loader back in 1947. Since then it has handled more than 50,000 tons a year with no major repairs and no appreciable signs of wear. We plan to get another 82-A this year to replace our oldest Barber-Greene which has been in continuous service since 1936."

Good design and rugged construction make it difficult to wear out Barber-Greene Loaders. Year after year they provide the cheapest and easiest way to load trucks from stockpile, bank or windrow. Crawler mounted for sure footing, the versatile loader handles bulk materials in one continuous, high-capacity flow. Easy to operate controls let drivers load their own trucks and reduce costly waiting time.

Other Barber-Greenes include the 543 Pneumatic-Tired Loader with swivel conveyor, and the 550 Windrow Loader.

Write for literature on any model in the cost-cutting loader line

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See you at the ROAD SHOW

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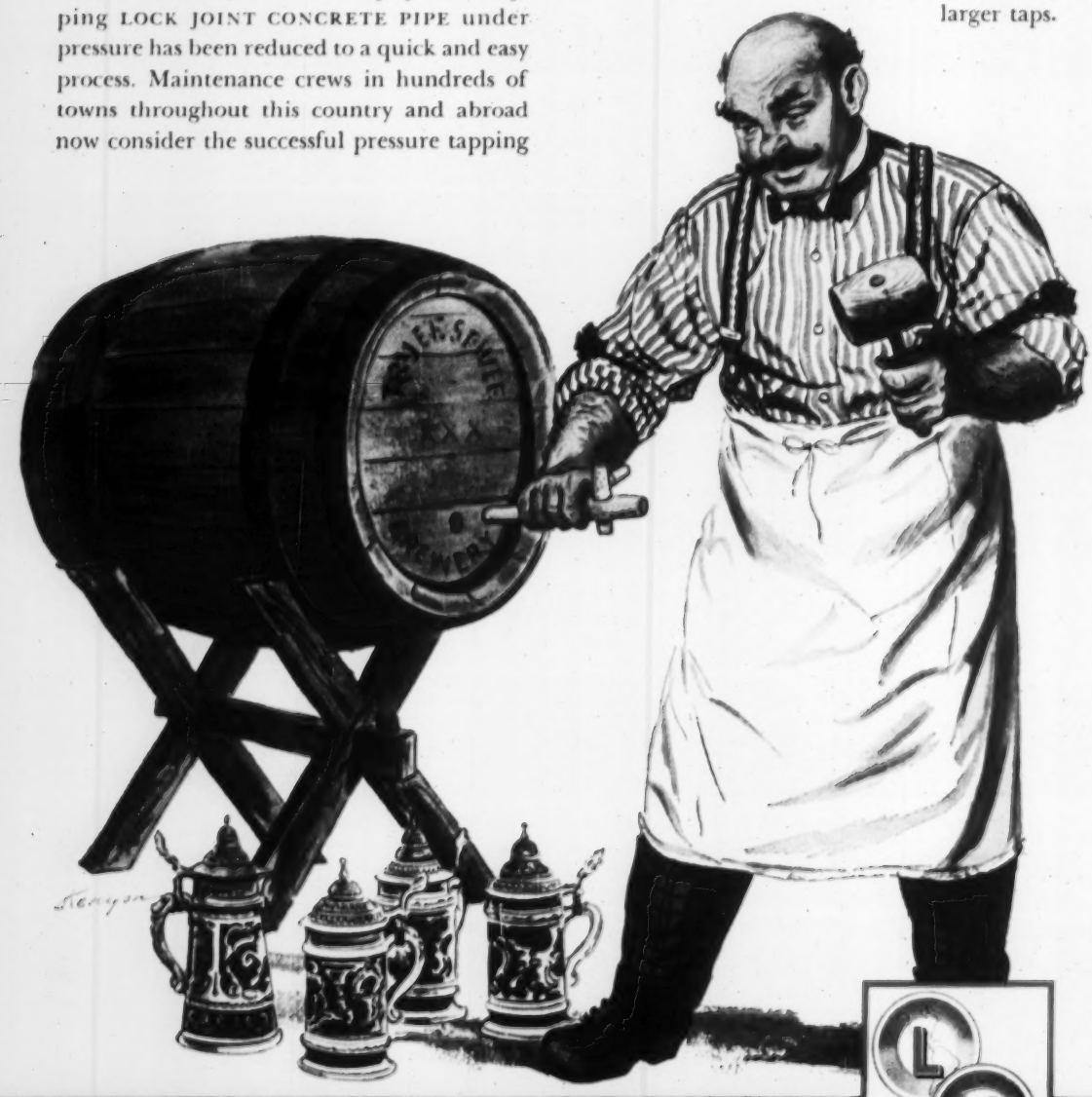
Gone are the days when it took an unerring eye and a mighty wallop to tap a keg of beer. Gone, too, are the days when tapping concrete pipe under pressure was a complex, difficult operation.

Thanks to today's modern equipment, tapping LOCK JOINT CONCRETE PIPE under pressure has been reduced to a quick and easy process. Maintenance crews in hundreds of towns throughout this country and abroad now consider the successful pressure tapping of LOCK JOINT CONCRETE PIPE to be a normal part of the daily routine.

Upon request, we would be glad to send you our brochure covering the few simple steps required either for making service connections or for making larger taps.



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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

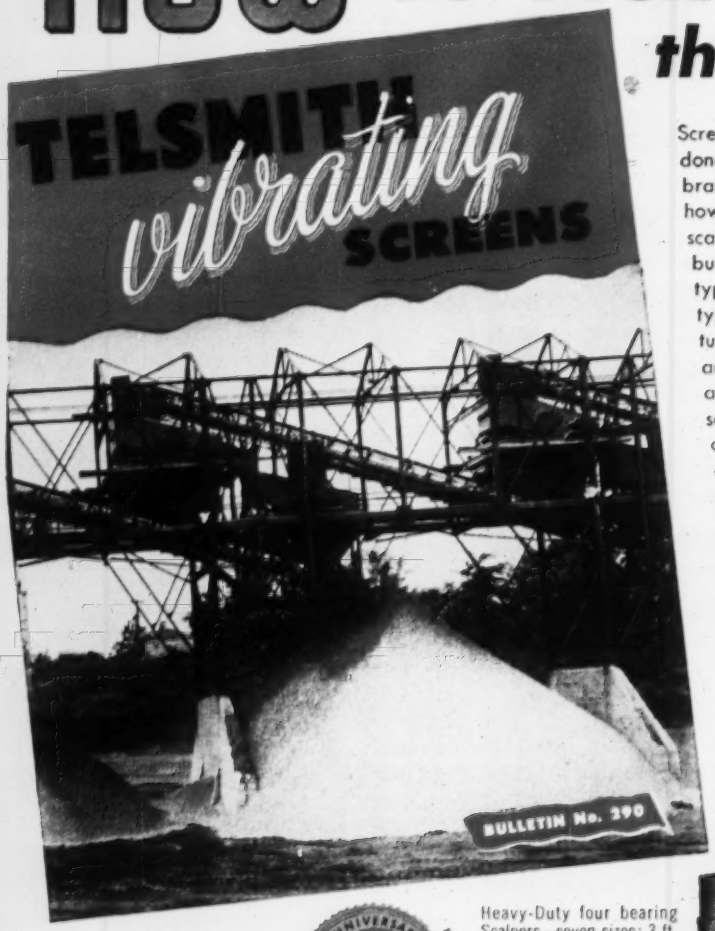
NEW YORK IT WILL BE—All the agitation and promotion to get engineering societies' headquarters moved from New York City has apparently been to no avail. The issue is finally settled. All four Founder Societies who have a piece of the present overcrowded headquarters building—plus the American Institute of Chemical Engineers which maintains separate offices there—have approved a recommendation that expanded facilities be sought without leaving town. Now that this big question has been settled, those concerned can get down to cases on whether the present property can be improved sufficiently to make do, or down to a serious quest for space and money out of which to create a new home for the five societies.

BACK PAT—New York State's Thruway—biggest of the tollroads—got a resounding pat on the back from C. D. Curtiss, Bureau of Public Roads chief, in an address to the American Automobile Association. Curtiss said, "Not a penny is needed to make the Thruway conform to federal requirements." But he coupled the compliment with what amounted to a warning to advocates of federal take-over of all toll road systems, with the comment that "many millions" would have to be spent on other expressways now in use before they meet interstate standards.

SERVICE CHARGES, BUT NO SERVICE—The Campbell-Kenton County (Kentucky) Sanitation District (ENR Sept. 20, p. 26)—the agency with the sewage treatment plant that has been shut down as an alleged malodorous nuisance—has won a significant victory in court. The district has the right to collect sewage service charges while its disposal plant is not operating. The district can compel cities to cut off water supply to persons who fail to pay sewage bills. And the district has a right to charge a 10% penalty on delinquent bills.

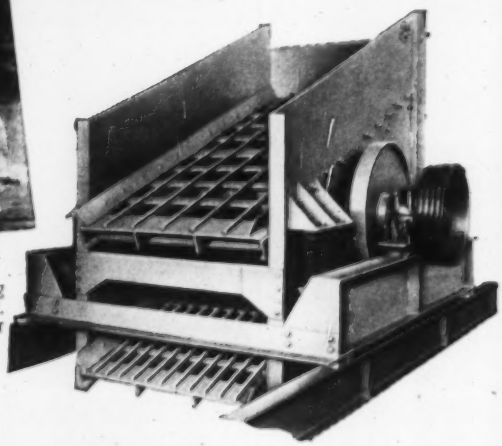
HIGH COST OF MOVING—Connecticut's present embroilment with Hamden and North Haven home owners is worth watching for a lesson in the high cost of relocation of either roads or homes. The state wants to run a section of its interstate roads through choice residential districts in the two towns. Residents object violently and have suggested five other routes. One of the relocation schemes would involve a tunnel through East Rock—and a cost increase of an estimated $50 million. Moving or buying 100 houses won't come near that figure but even with the state putting up only 10% of the needed money, no taxpayer has objected on cost grounds. Meanwhile—in an effort to save millions of dollars in right-of-way transactions—the Maryland State Roads Commission is investigating a house-moving method used at the St. Lawrence Seaway Project. There, huge trailers relocate dwellings.

HOW TO PICK SCREENS *that pay profits*



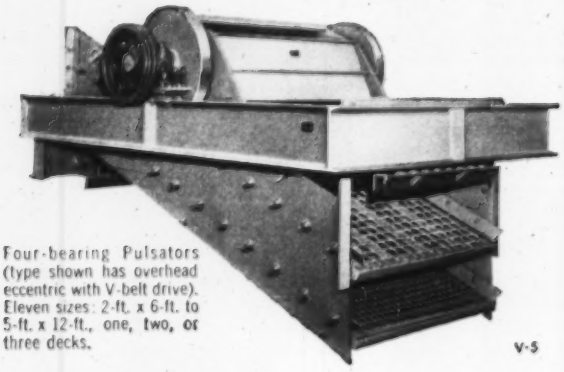
Screening aggregates is a tough job—but it can be done efficiently and at low cost—with Telsmith Vibrating Screens. This new Telsmith bulletin tells you how. It explains which type of screen is best for scalping . . . sizing . . . washing—and why Telsmith builds two types of four bearing screens and one type of two bearing screen. It describes each type; shows several new Telsmith Vibro-King features, including—new counterweight mechanism and new spring suspension, making it the smoothest and most efficient screen you can buy, either for scalping or finishing. Shows new heavy-duty tray construction; best methods for mounting screen cloth. Full of helpful pictures, diagrams and specifications.

Get this NEW BOOK FREE—Ask for No. 290



Heavy-Duty four bearing Scalpers—seven sizes: 3-ft. x 6-ft. to 5-ft. x 14-ft., one or two decks.

Two-bearing Vibro-King Screens—eleven sizes: 3-ft. x 6-ft. to 5-ft. x 16-ft., one, two, or three decks.



Four-bearing Pulsators (type shown has overhead eccentric with V-belt drive). Eleven sizes: 2-ft. x 6-ft. to 5-ft. x 12-ft., one, two, or three decks.

V-5

SMITH ENGINEERING WORKS

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WASHINGTON OBSERVER

More than $200 million in lease-purchase buildings was approved by the Administration this week. This is the final step in the lease-purchase procedure, permitting awards for architect-engineer contracts for 28 new government buildings all around the country.

Largest single lease-purchase project so far is in this group. This is the $65-million federal office building to be built in New York City. This makes a total of 98 building projects finally approved through the General Services Administration, at an estimated completion costs of around $700 million.

In this latest package there is business for 20 states ranging from Connecticut to Colorado, from Florida to Minnesota. Twenty of the projects will run over $1 million each; ten of these will cost $6-million or more.

Only a few weeks ago, there was doubt that all would be approved so quickly. As it is, only one project in the group submitted to the Budget Bureau was deferred; this is a proposed $898,000 Post Office.

•

Politics turned the Administration around sharply on aiding homebuilding. Lowering of down payments on low-cost homes and easing of requirements on sales of mortgages to Fannie Mae (see page 105) are a distinct victory for housing chief Albert Cole. It's also a moral victory for the homebuilders.

Cole has been battling for months with other advisers to the President, and the experts around town had judged that the odds were against a turnaround. In general, the across-the-board prosperity plus the big boom in construction (except for housing) supported those who felt that the Administration could stand pat on housing without suffering at the polls in November.

The lower down payments will give GOP politicos a talking point with which to answer Democratic charges.

•

Washington experts are already guessing on the 1957 construction outlook. And what they foresee is generally to the good. While volume should continue to rise, as it has for several years, costs will be going up at the same time, both on materials and labor.

Total construction should show an increase of about 4% over this year, the way the insiders see it now. This is in line with their official prediction of a couple months ago for the year 1956, which they then saw as running 4% over 1955. (Actually, there's some doubt whether this year will show this large an increase; figures for the first eight months show only a 2% increase over the same period last year.)

Cost increases of 4 or 5%, on the average, look certain within the next 12 months. Price increases on steel and other materials are yet to be completely felt, and wage rates are equally bound to climb.

This boomy talk takes into account the tight money situation. Officials privately say—barring some unforeseen emergency—that the complaints will continue, but business actually will keep on growing.

•

Proposals to give a new round of tax amortization to help steel expansion have stalled again—or may have hit a real snag. The Defense Mobilization Board—which has seven of the ten Cabinet members on it—decided not to decide whether fast tax write-offs should be given to get more capacity to produce structural steel and other needed types.

The board bucked the decision to the full Cabinet which is to meet this week. In general, this is taken as an indication of the strength of the opposition inside the Administration. Sec. of Treasury George Humphrey has always sided against any new tax aid; Sec. of Commerce Weeks is also reported now as leaning against, rather than for.

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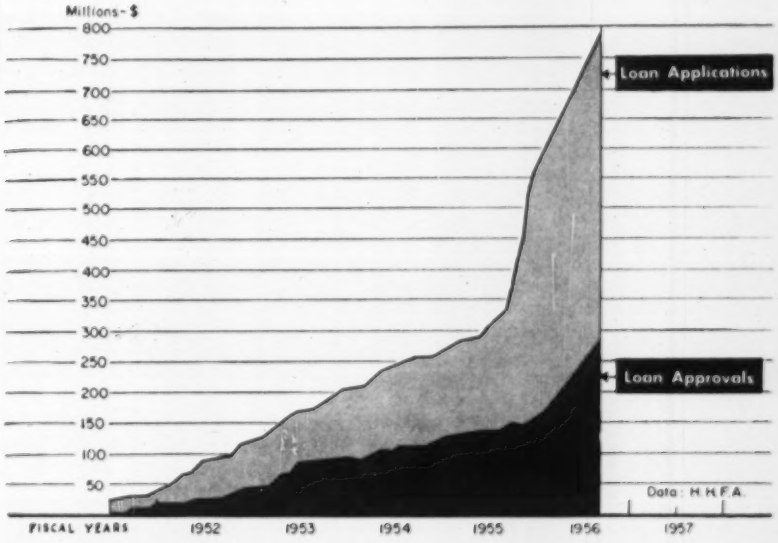
Loans to construct campus housing have skyrocketed as enrollments keep climbing. And it's only the beginning as . . .



The Building Boom Goes to College

College construction is mushrooming into boom proportions under pressure of fast-growing student enrollments.

With registrations rising at a far faster rate than predicted, college authorities are speeding up project plans for construction of additional facilities that can no longer be deferred.

First effects of the speedup are plainly evident in the flood of loan applications for college housing that pour into Washington. The government program, established in 1950, is experiencing the biggest boom in its history.

More than $450 million of loan requests have been received in the last 15 months, to finance construction of dormitories, family quarters and related facilities. By comparison, only $335 million had been sought during the previous five years.

• The Volume Builds Up

Loan approvals and commitments necessarily lag several months behind applications. But the Community Facilities Administration, which runs the program for the Housing and Home Finance Agency, pushed applications through these stages at a record-breaking pace during the last year.

As a result, the expanding program already has built up a large volume of design and construction business. Right now, private architects are drafting final plans and specifications for 92 projects that are to be built by their college clients with the help of federal loans.

These 92 buildings, costing about $90 million, will be publicly advertised for competitive construction bids, as required by law, within the next few months. Bid invitations for each project will go out as soon as architectural design work is completed. The final design jobs, which ordinarily take three to eight months for structures ranging from $300,000 to $3 million in cost, are in various stages of completion today.

Behind these projects now moving toward construction contract awards, the agency has another big pool of nearly 200 buildings for which preliminary plans have already been approved. Federal funds to finance the $170-million cost of the structures have been reserved by CFA, and loan contracts will be signed as soon as the agency gives final approval.

In addition, CFA is now studying the preliminary plans and loan applications for some 130 projects, valued at more than $125 million, which are advancing rapidly to the next stage of preliminary approval and reservation of funds. This initial group of projects starting through the processing chain is constantly replenished from the inflow of new applications. Requests come in at the rate of 25 to 30 a month, for projects averaging about $1 million each.

College authorities last year got their first tangible warning that the tidal wave of students was rushing upon them much faster than expected. Enrollments went up 250,000 to a record total of 2,750,000. An increase of only 100,000 had been estimated earlier in the year by the U. S. Office of Education.

This fall, student registrations are pushing the total above 3 million. Last year's projections forecast a much slower rise that would not pass the 3-million mark until 1960. There are no estimates yet for the next few years, but informed guesses point to a total of 3.5 to 4 million in 1960 and some 5 million by 1965.

• Fast Service

Loan applications get fast service in the Community Facilities Administration. Commissioner John F. Hazeltine, who heads CFA, and Jay du Von, director of the College Housing Branch, cut red tape to a minimum in the handling of loan requests. Backed to the fullest by Housing Administrator Albert

. . . The building boom on the campus

Cole, these officials limit CFA requirements to the bare essentials necessary for a sound loan on a solid project.

For its original application, a college fills out only two sides of a single sheet and sends it in with the architect's preliminary plans (elevation, floor plan and basic facts on type of structure proposed). The college also submits a copy of its charter, to show that it has legal authority for borrowing money.

After this submission gets preliminary approval, the college has only two more sheets to fill out with additional information for final action by the agency.

An application that meets the essentials can advance to the final stage of signing the loan contract in three months. If legal or financial questions crop up, however, negotiations take longer.

Within weeks after receiving an application, CFA checks the request. And, upon finding it eligible, gives preliminary approval, accompanied by reservation of funds to cover the proposed loan.

Sometimes a request will ask money for more building space than the college can put to use at the scheduled completion date, according to the institution's own figures as evaluated by the agency. In that case, a portion of the request is deferred, and the college is asked to apply only for the top-priority construction. Similarly, requests from colleges that lack legal authority to borrow have to be weeded out, along with any other applications that don't pass the eligibility test.

In the last 15 months, nearly $400 million of loan applications passed the initial screening test and were declared eligible for active consideration. Many of these moved ahead to preliminary approval and to final loan agreement in the same period.

Since midsummer of last year, when the big bulge started, CFA has given preliminary approval to more than $275 million of loan applications and has pushed nearly $150 million through to contract closing. On the books are an additional $300 million now on their way to final acceptance.

This backlog includes about $170 million that have received preliminary okay and are approaching contract agreement, plus $130 million under active study for preliminary approval.

• Help From Congress

Congress gave the government loan program a boost in the housing legislation that it passed last year. Against the wishes of the Administration, the legislators reduced the interest charge by inserting a mandatory formula, tied to the rate for government bonds. This change lowered the interest rate on college loans last year to 2¼%. On July 1 of this year, the rate moved up to 2⅝%.

Lowering the interest rate killed off any chance for private investors to bid on college housing loans. During the two preceding years, the Administration had adjusted loan terms to encourage private lending to colleges through purchase of housing bond issues.

Only when a college failed to get a private bid of 3.5% or less during the first year and 3.6% or less during the second, did HHFA make a loan at a lower rate—first 3.25% and later 3.5%. The policy paid off in a number of private loans. Most of the 88 loans that have shifted from government to private sources made the change during those two years. The total of the 88 projects amounted to $80 million.

Congress further liberalized loan terms last year by increasing the amortization period from 40 years to 50 years. CFA encourages colleges to stick to the 40-year term whenever possible. The 1955 law also broadened the program to include services essential to college housing, such as dining halls and cafeterias, student unions and centers, and health facilities. Up to that time, loans had been limited to construction of housing for students and faculty members.

Building of residence halls, of course, continues to get first emphasis. Some $50 million for supplemental facilities, however, is included in the $275 million of applications that cleared the first approval stage in the last year.

• Architectural Freedom

Surprisingly, CFA imposes no criteria and no fixed standards on the college or the architect in planning a project. Within the limits of the law, the applicant sets the pattern for the loan and the building on which it is based.

Hazeltine sums up the policy this way: "Let the applicant determine what is wanted in a building to fit the school needs. A good architect then can design a handsome structure that is not elaborate."

Standards imposed from above would ruin this approach. But Hazeltine concedes that lack of uniform criteria makes the program harder to administer. Architects, of course, enthusiastically endorse the design freedom permitted, and college authorities like it, too.

Giving full play to architectural expression on individual projects, however, doesn't mean that the lending agency takes no part in the design. Every loan has to be paid back to the government, with interest, in fairly uniform annual amounts as serial bonds fall due. And anything saved in the building reduces the amount that the college has to repay.

With a nationwide proving ground of dormitory construction under constant observation, CFA people can and do recommend many cost-saving ideas to designers. Plans and specifications for every project have to pass inspection in the regional and central offices, and these reviews often lead to modifications that reduce costs without detracting from the appearance of the building.

And after a project goes under construction, engineers from the regional office of HHFA make twice-a-month inspections of the job. Auditors for CFA also keep the project under control. They set up the books at the start and audit them at the finish.

All funds have to be paid in and out of a single account for the projects, eliminating any chance for windfalls. There would be no danger of misuse of funds, anyway, du Von says. College people just don't operate that way.

Friend in Need

Water plan set up to help New York's needy neighbor

New York City last week took steps to avert a threatened water shortage for neighboring Westchester County.

The plan—worked out at a conference between city and county water department engineers—calls for reducing algae in the chain of Croton Reservoirs and allowing some of the better water to flow into the new Croton Aqueduct, which the needy communities have been tapping.

When New York drained lower Croton Reservoir last month to permit repairs on a Cornell Dam spillway, it removed a source of water supply for a number of western Westchester communities. This action, coupled with a period of low rainfall, created possibilities of a water shortage for the city's upstate neighbors.

As a first step to relieve the emergency Arthur C. Ford, New York City Commissioner of Water Supply, Gas & Electricity, directed that copper sulfate be added to water in Muscoot Reservoir and the sluice gates opened. Water from the upper reservoirs of the Croton chain is thus released to the lower reservoirs and from there delivered to Croton Aqueduct.

Water is to be drawn from an old dam three miles east of Cornell Dam, where the water level is higher. Meanwhile, New York City will continue to use Catskill and Delaware Aqueducts until the Croton system is returned to normal.

At AGC meeting in Milwaukee, the spotlight was on . . .

Manpower—One More Problem for Contractors

Manpower—from two viewpoints and with different classifications—is the principal concern of contractors as they assess the impact of the huge new highway building program on the construction industry.

The men who will transform the plans into miles of roads and bridges are concerned to a degree about material shortages. (They believe that steel and cement will be in short supply for the next 10 years). They think that competition will be keen and healthy—but that prices will go up a bit. And they are not at all worried about their own ability to meet the challenge of a $33-billion program.

Their main concern is engineering manpower and labor relations.

That stands out from three days of meetings at Milwaukee last week as the Advisory and Governing Boards of the Associated General Contractors wound up their annual deliberations. More than 400 leaders of the 6,600-member organization spent the three days talking AGC business in part—but exchanging views on their own business as well.

General prospects for business were good. The contractors were talking in terms of a total of $78 billion worth by 1965, (including maintenance and repair) up from what they estimate as the current yearly rate of $60 billion.

• Engineering Manpower

Although it is the highway program that lends greatest urgency to the problem of engineering manpower, the contractors also were concerned with the engineer shortage as it affects all phases of their business.

In formal sessions, their discussion was led off with an address by W. A. Bugge, Washington's Director of Highways, who urged the need for on-the-job training programs, "realistic" salaries and administrative changes that are planned to relieve trained engineers of details.

And on an equally serious plane, the group heard two committee reports on education—both aimed at the long-range problem of providing proper training for engineers and finding enough students to fill the needs of the construction industry.

The AGC education committee endorsed both in principle and as a long-range objective the course of study recommended by W. A. Klinger, committee co-chairman, who has been a spark plug in a joint AGC-American Society for Engineering Education Committee on Education.

The Klinger (and the committee) recommendations call for:

- A five-year college curriculum that will result in the award of a B.S. degree in civil engineering after the fourth year but will include a broader base of subjects aimed at training the student for construction administration problems.
- Award of a degree of Master of Construction Engineering after the fifth year.

As immediate objectives, the committee's resolution urged:

1. Cooperation with all other interested groups to improve secondary-school curricula—particularly mathematics and science—to give a better foundation for later engineering studies.
2. Wider acceptance by colleges and universities of four-year courses in civil engineering with construction options.
3. Contractors and others connected with the construction industry to make summer employment available for student engineers and faculty members.
4. Inclusion of construction subjects in university extension and night-school courses.
5. AGC chapters to establish scholarships for students willing to take a fifth year of construction courses.
6. That "raiding" of faculties of engineering schools by elements of the construction industry must be discouraged.

The contractors obviously were well aware that what they proposed is a long-range program requiring added financing, special training, personnel and facilities not now available.

• Labor Relations

Concerning the question of labor, the worry wasn't focused on availability but rather on the requirement in the highway bill that will impose prevailing wage regulations on many highway jobs.

It was clear from discussions and an approved resolution that the group was perturbed about two principal matters. The first is the possibility that imposition of rates from Washington will upset local labor conditions. The second is that labor will increase its recent trend toward attempting to ignore or bypass the National Joint Board for Settlement of Jurisdictional Disputes.

On prevailing wages, the AGC group urged that the U.S. Department of Labor:

- Extend the life of any prevailing-wage decision from the present 90 days to at least six months.
- Work directly with state highway departments on setting wages, instead of working indirectly through its own regional offices.
- Be careful to avoid the use of building rates for highway jobs—but give careful consideration to conditions that affect highway construction.

On the question of the Joint Board, the contractors reflected a growing worry in their own ranks as to the future of the board. Their resolutions took the form of official "advice" to the AFL's Building and Construction Trades Department and declared that:

- AGC will rely on labor's pledge that there will be no stoppage of work arising out of any jurisdictional dispute.
- The "continuing trend of indifference" on the part of labor to the established procedures of the Joint Board has "adverse effect on the prestige of the . . . board, and on the industry as a whole."
- AGC "insists" that the Building and Construction Trades Department and its affiliates exert every effort to bring about better cooperation and compliance.

Reinforcing this strong stand the labor committee also approved a resolution recommending that AGC support the U.S. Chamber of Commerce in its fight against secondary boycotts.

On equipment, said a joint AGC-Construction Industry Manufacturers Association committee, there will be no shortages of equipment used solely for highway purposes. The group cited good equipment inventories now in the hands of contractors; expansion of manufacturers' capacities; the possibility of curtailing foreign shipments, if U.S. demand warrants such a move.

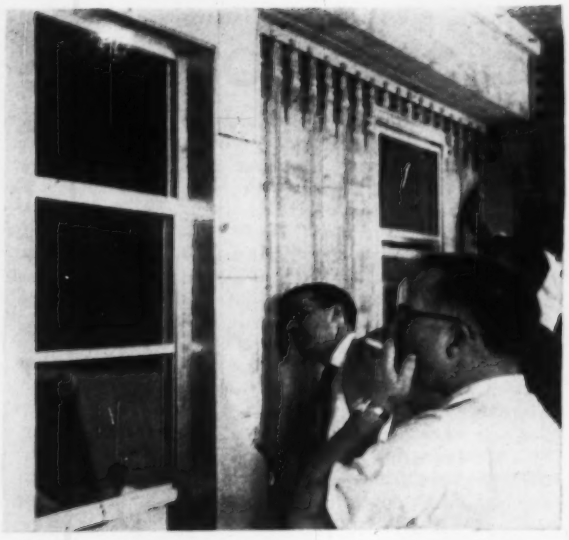
• And Competition Too

As always, the contractors were concerned about competition and prices. Surveying its own members, AGC reported that slightly more than half saw competition remaining about as at present—a sign, said AGC, that competition is so keen now that it can hardly become keener. But half the contractors polled expected to see bid prices go up over the next six months—though 39% saw no change, and 12% even thought there might be a decline.

• **Nominations of officers**—As a final order of business, the board nominated Lester C. Rogers, Bates & Rogers Construction Corp., Chicago, Illinois for 1957 president, and Fred W. Heldenfels, Jr., of Heldenfels Brothers, Corpus Christi, Texas, for vice president.

Balloting will be by mail and the new officers will be installed early in 1957.

BRI conference on masonry yields valuable information on wall costs and maintenance and previews new developments, as . . .



Masonry Producers Unveil New Wa

Masonry producers are preparing to meet the competition from metal and concrete-panel fabricators with thin-wall assemblies of their own. This is evident from research reports presented at the Modern Masonry Conference conducted by the Building Research Institute in Washington, D. C. last week.

The conference was sponsored by the Allied Masonry Council and drew an attendance of about 320.

In addition to previewing new products, the conferees also considered means of avoiding wall failures, delved into costs and examined design and construction techniques.

• **Brick and tile research**—Robert B. Taylor, director, Structural Clay Products Research Foundation, Geneva, Ill., disclosed that his organization now has an operating budget of about $500,000. Results made possible by the research program include improved wall assemblies and more efficient site techniques.

Since the SCPRF introduced the SCR insulated cavity wall and SCR brick, a 6-in.-thick unit (1952), the foundation has made studies leading to development of scaffolds that can improve productivity 20% to 25%.

New wall products include a ¾-in.-thick clay slab with a "Norman brick" face size called SCR Re-Nu-Veneer a 2¼-in.-thick brick panel with steel-reinforced cement grout backing; a structural ceramic glazed clay tile unit 4 in. thick, which has a 60% sound absorption and a sound transmission loss of 47 DB unplastered; an unusually lightweight clay brick; and mortars with bond strengths exceeding 200 psi, instead of the usual 50 psi.

• **Stone developments**—J. T. McKnight, executive director, Indiana Limestone Institute, Bedford, Ind., said that research by his group has made available a through-wall sandwich unit. It consists of a 3-in. stone facing, 2 in. of rigid insulation and 3 in. of natural stone aggregate with a resin emulsion binder. For ease of handling, it will be 5 in. high by 24 in. long.

Another new assembly is a large panel (8x3 ft) composed of a 2-in. stone facing and 2 in. of wood-fiber concrete.

A. T. Howe, vice-president, Vermont Marble Co., Middlebury, Vt., called attention to marble entries in the thin-wall field. Included are an elementary school in West Columbia, Texas, with walls above and below windows consisting only of ⅜-in. thick marble; and the Gulf Oil Building, Atlanta, which has an exterior facing of ⅜-in. marble, backed up with ½ in. of parging, an air

Where the Building Dollar Goes

Item	Percent of Total Cost
Excavation and Foundations	4 53
Steel Frame and Fireproofing	16 92
Brick and Stone Masonry Windows and Glazing	8 72
Roofing and Flashing	0 45
Waterproofing	0 36
Interior Partitions	8 29
Metal Lath and Plaster	2 32
Carpentry and Millwork	1 26
Miscellaneous and Ornamental Metal	2 85
Cement Finish Floors	1 48
Tile, Terrazzo and Marble	2 35
Floor Coverings	0 52
Painting and Decorating	0 69
Acoustical Treatment	2 45
Finished Hardware	0 27
Security Vaults	0 60
Heating, Ventilating and Air Conditioning	19 55
Plumbing	5 59
Wiring and Fixtures	10 28
Elevators and Conveyors	9 12
Job Supervision and General Expense	1 40
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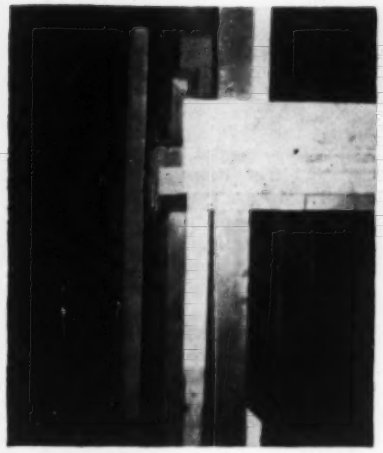
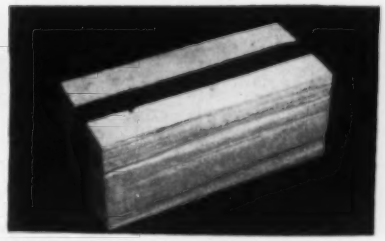
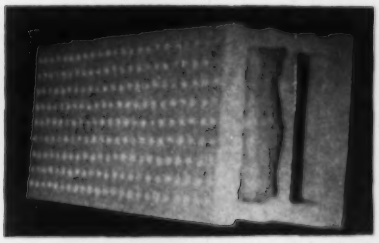


BRICK PANEL 2½ in .thick (above), with a cement-grout backing (left), has been developed for curtain walls.



NEW SANDWICH PANEL, 8-in. thick, consists of limestone, rigid insulation and aggregate with resin binder.



CLAY TILE 4 in. thick, developed for both acoustic and structural purposes, has a perforated face and glass-fiber insert.

Assemblies

space, 3 in. of rigid insulation and ¾ in. of plaster, for a total thickness of 5¼ in. Cutting equipment now available makes even thinner facings possible.

• **Ceramic veneer progress**—Albert E. Barnes, manager, architectural products promotion, Gladding, McBean & Co., reported development of a prefabricated ceramic veneer (architectural terra cotta) unit, called CV Panelwall. One type—now being installed on the exterior of the Methodist Hospital, Arcadia, Calif.—is 3 to 5 in. thick and ranges in size up to about 30 sq ft. It consists of a 1-in. ceramic-veneer facing and 2 in. or more of lightweight reinforced concrete. A much thinner panel (1¾ in. thick) is under development.

• **Comparative costs**—An estimate of how masonry exterior walls stack up costwise against other materials was given the conference by H. T. Noyes, vice president, Turner Construction Co., New York City. He pointed out that while wall costs have risen in step with other items, their proportion of the total building cost generally has gone down. For a 20-story office building constructed in 1927, brick and stone walls, window and glass came to 19.8% of the total cost, whereas similar walls for a 25-story office building erected in 1949 represented only 8.29% of the total cost. (Electrical and mechanical costs changed from 27.52% in the 1927 building to 44.54% in the more recent one.) A breakdown of office-building costs for the New York City area is given in an accompanying table.

A comparison of wall costs is presented in another table. These are costs-in-place as experienced in various buildings, corrected to July 1956.

• **How to cut maintenance**—Alf M. Myhre, architectural and civil specifications engineer, Design Division, Engineering Department, E. I. duPont de Nemours & Co., Wilmington, Del., offered the following suggestions for avoiding wall troubles:

• Recognize that walls undergo dimensional changes and that restraint cannot stop the movement. Provide wall stability by using flexible ties to columns, beams and spandrels.

• Except when absolutely necessary, do not surround steel or concrete columns, beams or spandrels with masonry. Especially, do not place masonry in contact with columns. Prevent physical contact between edges of decks or floor slabs and the inside face of masonry walls.

• When spandrels are necessary for support of masonry in multi-story buildings, make them stiff—even to the point of preventing deflection of more than 1/500 the span—and provide slotted connections at one end to prevent cumulative expansion.

• Provide expansion joints where necessary. DuPont has found that the provision of one expansion joint in each 140 ft of straight wall is quite satisfactory when walls are faced with burned brick units.

• Eliminate parapet walls.

• Use calking compounds that remain truly elastic and provide lasting adhesion to both masonry and metal surfaces.

• Keep the walls dry as they are constructed and waterproof them as soon as possible.

Charles A. Peters, director, Buildings Management Division, U. S. Public Buildings Service, Washington, D. C., said that with stonework, poor workmanship, unsatisfactory bonding materials and lack of protection of the work during construction are the principal sources of trouble.

Peters reported that the tendency to use high-strength mortar usually results in poor bond with masonry units. Shrinkage quite often destroys the bond.

With brickwork, he believes, the chief trouble is the difficulty of getting sufficient mortar in vertical joints.

What Owners Had to Pay for Walls

Type of Building	Location	Description	Cost— $ per sq. ft.
32-story office	New York City	Face Brick and Aluminum Sash	5.20
3-4 story lab.	New York State	Roman Brick and Aluminum Sash	5.47
5-story hospital	New York City	Brick Cavity Wall	4.60
25-story office	New York City	Limestone—Alum. sash and spandrel	7.40
25-story office	New York City	Limestone includ. spandrel—Steel windows	6.15
6-story Telephone	Near New York City	Blast Resistant limestone and conc.	8.90
2-story lab.	New York State	Alum. Porcelain Enamel and glass	6.30
41-story office	Pennsylvania	Limestone with stainless steel windows and Steel spandrels	12.30
42-story office	New York City	Stainless Steel with reversible sash	7.20
3-story office	New England	Alum. Stainless Steel Trim and ⅜-inch Solex Glass	11.75
2-story office	Near Philadelphia	Porcelain Enamel Stainless Steel and Glass	$11.60/sf.
1-story manfg.	Virginia	Concrete tilt-up and corrugated asbestos	1.22

When it comes to faster roadbuilding . . .

County Officials Have Their Problems, Too

With attention focused these days on the "Grand Plan" for implementing and expediting a multi-billion-dollar interstate highway system, county officials are apprehensive as to how their own roadbuilding will be affected.

Last week at Mackinac Island, Mich., some 500 county engineers and officials took a searching look at this and other knotty problems. The three-day conference, sponsored by the American Road Builders Association's County and Local Roads Division, was the fourth such annual meeting.

"Stretching the county highway tax dollar with engineering management" was the conference theme. And, according to both formal statements from the convention rostrum and informal coffee-break comments, this complex problem is uppermost in the minds of many county officials today. One obvious answer is to increase productivity of engineers by taking advantage of the latest advancements in labor-saving methods of design and field engineering.

• **Local outlook**—The average county engineer isn't awed by the size of the interstate highway program. Nor does he feel especially slighted or overlooked in the over-all federal-aid highway program—both state and federal speakers on the program assured him he wouldn't be. But just the same, the increased tempo of interstate highway planning and construction is posing some perplexing problems to the county engineer.

For one thing, construction of a modern four-lane divided interstate highway requires the securing of a lot of right-of-way, which frequently meets with vigorous local objections. Moreover, the building of such a controlled-access highway requires the closing off of numerous county and local roads, or diverting local travel along service roads to an overpass or underpass or a point of access. This often doesn't set too well with local interests with whom the county engineer must deal.

Another point of concern to the county engineer in the small-to-medium size category is that with major emphasis on a greatly expanded interstate highway program, popular support for county and local roads could diminish to an alarming level. On the other hand, the larger and richer counties report increasing demand for higher type local and county roads.

In many areas, the influence of higher standards of design incorporated in both tollroads and interstate routes is being reflected in what the motorist wants in the way of local roads. This unquestionably will result in more and better feeder roads as the interstate system is expanded.

• **How about materials?**—At the same time there seems to be considerable apprehension in some county engineer circles that roadbuilding materials may become a serious bottleneck in their programs. Not that their own requirements will be so great as to exhaust supplies, but that the multi-million-dollar interstate highway projects will deplete them. Thus, some of the counties might have difficulty filling their needs for cement, steel, gravel, sand and other basic roadbuilding materials.

Said J. N. Robertson, President of ARBA and Director of Highways, District of Columbia: "There will be a tremendous demand for roadbuilding equipment, materials and manpower, that must affect the counties."

Robertson pointed out that within the next five years the demand for roadbuilding equipment will increase 200%. Between now and 1970 a total of 26 million tons of structural steel will be needed for the entire federal-aid highway, also 17 million tons of reinforcing steel and 49 million tons of other miscellaneous steel, including corrugated metal pipe. During this same period the roadbuilders will be looking for 1.5 billion barrels of portland cement and 130 million tons of bituminous material and 19 billion tons of aggregates.

Probably five years from now this accelerated roadbuilding program will provide employment for 1,500,000 persons, of which at least 500,000 will be working directly on the construction jobs.

This program will be an incentive to the inventive genius of the equipment manufacturer, declared Robertson. All kinds of new and unusual and economically operated equipment and machinery will be developed. And the demand for such items as new traffic signs may reach 1 million in a single year, or perhaps 5 million gallons of paint. These are only a few examples of the tremendous impact on business and industry of this vitally needed roadbuilding program that is now going ahead, Robertson said.

• **Counties remembered**—Similar views were expressed by ARBA's Executive Vice-President, Maj. Gen. Louis W. Prentiss (U.S.A. Ret). He assured his listeners that county organizations are the backbone of the national highway program, without the glory and glamor of tollroads and suspension bridges. "ARBA will continue," he said, "to advocate and work for higher pay for county and state highway departments."

ARBA's objective in the highway program is to find out what needs to

Grand Plan Gets Boost From ARBA

County engineers and officials heard a major piece of good news at last week's conference. They were told that ARBA directors have approved sponsorship of a program to help expedite roadbuilding—and that ARBA Executive Vice-President Prentiss has been authorized to carry it out.

This is what ARBA plans to do under its new program:

• Prepare a series of 26 full page institutional type ads for the magazine, "Editor and Publisher," to tell ARBA's story to U. S. newspaper editors, and to seek, through them, the instigation of local campaigns to eliminate bottlenecks in the national highway program.

• Prepare a 28-minute color sound film of the highway industry, showing: (1) the need for the roadbuilding program; (2) how modern highways are engineered; (3) how they are built; (4) safety and convenience features, and (5) their economic impact. This film will be released to the general public through state highway departments to arouse interest in the program and educate the public to the need for adequate highways. It also will be released to high schools and colleges to attract boys to engineering as a profession.

• Formulate plans for creation of an ARBA Highway Engineering Educational Foundation to support the association's plan for stimulating interest in the future of highway engineering as a profession.

• Get out a new "Roadbuilders News" on a format that will cover all segments of the industry and better serve the industry.

• Publish a weekly Washington Newsletter covering matters of interest to the highway industry, federal departments and Congress.

• Initiate an immediate new membership campaign to broaden the base of support and participation, and help pay for the many things that must be done to get the program rolling.

be done now to insure its implementation and expediting. "We must make a continuing analysis of the situation and work on trouble spots before they develop," Prentiss said.

"Yesterday's needs were money and authority," declared Prentiss. "That we have. Today's needs are to get the roadbuilding program going by eliminating the bottlenecks involving such functions as adequate engineering, right-of-way acquisition and better public understanding. Tomorrow's needs will be added capacity of contractors, manufacturers of equipment and material suppliers."

Researchers Wanted

New England Water Works Assn. hears plight of federal research: Money but no men

A scarcity of brainpower is the chief obstacle in the path of research progress in the field of sanitary engineering, according to Harry A. Faber, Research Coordinator for the U. S. Public Health Service.

Speaking at the New England Water Works Association meeting last week in Bretton Woods, N. H., Faber stated that money was available—more this year than last—but the men to perform the projects were not to be found.

Discussion of Faber's remarks brought out the point that part of this money offered as high salaries might unearth some of the needed scientists; and Thomas R. Camp of Camp, Dresser & McKee, Boston, made the serious suggestion that increased size of individual grants might remedy current apathy among research agencies toward tackling the offered projects. Grants now average about $10,000 per project per year; Camp suggested increased project scope and size to the neighborhood of $50,000 per year.

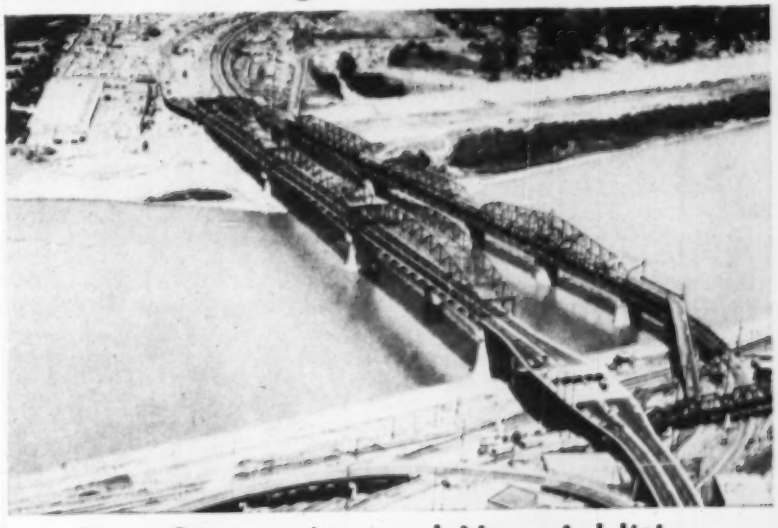
Among the projects needing more intensive research, Faber listed: brine conversion, process water reuse, induced precipitation and radioactive wastes. He pointed out that during the current fiscal year $571,000 will be available through PHS for research grants; an increase from the $466,000 allotted the previous year. And perhaps double the current amount may be budgeted in the next fiscal year under the new water pollution control law, ventured Faber.

PHS has 41 research projects going currently. Typical examples cited are the investigation into toxicity of chromium at Michigan, and the attempt at nutrient recovery through algae production in sewage ponds at the University of California. Faber emphasized the need for more research into processes which he called accidental discoveries.

Charging the sanitary engineering profession with failure to attract enough intelligent high school students to its ranks, Faber brought out the information that in the last two years there were almost as many masters degrees in the sanitary field as there were bachelors degrees.

With this meeting in Bretton Woods, NEWWA headed into its 75th year. Edward L. Tracy, chief of Vermont's Bureau of Environmental Sanitation, took over the presidency of the association from Allan F. McAlary, of the Rockland (Maine) Water Company.

Missouri Crossings: Ancestor (1869) . . .



. . . First Generation and New Addition

On July 3, 1869, engineer and pioneer airman Octave Chanute proudly walked across the wood truss bridge with its right bank swing-span at Kansas City, Mo., to the plaudits of a crowd that welcomed the first permanent crossing over the wild "Big Muddy."

Chanute built well. His structure stood until 1917, when it was replaced (on the same site) by the steel bridge at right in the lower photo. The new crossing carried railroad tracks on a lower level and a two-lane roadway on the upper.

But with construction of Kansas City's Municipal Airport just across the river from the city, and residential and business development on the east bank, the bridge became a bottleneck for road traffic. Construction of a new toll span started two years ago.

The new Broadway Bridge and its approaches comprise a 3.7-mi project, cost about $13 million, and is owned by the city of Kansas City. The quarter-mile main structure carries two 22-ft roadways and a 4-ft median, and includes—with approaches—about 7,500 tons of structural steel. Foundations are supported by tubular steel pies filled with concrete.

What Are the Facts?

Funds sought for survey of engineering profession

A proposal for a survey of the engineering profession is out for endorsement.

The proposal—prepared by an 11-man joint committee of Engineers' Council for Professional Development and Engineers Joint Council, and headed by M. D. Hooven—is the start of fulfillment of a mandate given to Thorndike Saville, president of ECPD, to sponsor such a survey (ENR Mar. 22, p. 67).

Constituent societies of both bodies are being asked to approve establishment of a Joint ECPD-EJC Committee on a Survey of the Engineering Profession; to provide an immediate subsidy of $50,000 to initiate the survey (other sources are expected to provide the $1 million necessary for the study); to endorse the proposal itself.

The survey, expected to require at least two years, would be organized so that various groups will investigate their own specialties.

It would be the new committee's responsibility to appoint a director and small staff to assist in detailing the program, and later administer it under the committee's auspices. Progress reports would be made to ECPD and EJC.

• **What is sought**—Gathering of facts, analyzing these facts, making recommendations, and providing ways and means of implementing the recommendations would all fall within the scope of the survey. It would deal with:

• Professional services and responsibilities—What are the strictly professional responsibilities of the engineer, and how does he influence the application of his efforts; how effective are various codes of ethics; what can be done to make the engineer a broader person?

• Supply—A general and detailed study of the shortage of engineers; how engineers are used; demands of other professions; how to alleviate the shortage; how will a greater number of engineers affect the members of the profession?

• The individual—A study of the engineer as a social, cultural and economic entity; what makes him tick; how he reacts to the different facets of his profession; the interaction between the engineer as a person and as an engineer.

• Sub-professional service—What are the human and mechanical aids given the engineer; how much does the engineer have to do himself; what are the characteristics of, and prospects for more, sub-professional services?

• Education—A more thorough examination of present information of education, including the education of the engineer out of school.

• Registration and unionization—Extent and effects of both.

• Organization—Extent and effects of organizations in the profession; influence of such organizations; the question of unity.

Failure Sparks More Studies

New investigations of the behavior of continuous reinforced concrete framing have been initiated following collapse of a concrete warehouse roof Sept. 5 at Robins Air Force Base, near Macon, Ga. The building had been in use about 18 months.

The collapse took place at 3 a.m. No one was injured, but some of the material stored in the building was damaged.

The failure occurred in a girder in each of two adjacent bents well inside the building, near an expansion joint. Both girders broke near an inflection point and the other ends slid off the expansion bearings. About 5,000 sq ft of the 1,600x400-ft structure was involved.

• **Failure follows precedent**—Preliminary investigations by the Corps of Engineers, and by Amman & Whitney and other consulting engineers engaged by the Chief of Engineers, indicate that the failure was similar in nature to that in a warehouse at Wilkins Air Force Base, Shelby, Ohio, on Aug. 17, 1955. Consultants have reported that the Wilkins AFB failure could have been caused by a combination of conditions, such as faulty design assumptions, over-estimation of tensile strength of concrete, "frozen" expansion joints and volumetric changes in the concrete (ENR Jan. 12, p. 21). However, new studies are being made as a result of the Robins AFB failure.

Both warehouses had been constructed for the Air Force under the supervision of the Corps of Engineers. L. P. Kooken Co., Baltimore, was the structural engineer.

• **Design had been changed**—Like the one at Wilkins AFB, the warehouse at Robins AFB is one-story, rigid-frame construction. However, the design had been modified in that the girders are reinforced at top and bottom for the full length and have web reinforcement throughout. In the Wilkins girders, top steel and web reinforcement were not used very far past inflection points. Also, instead of purlins made of prestressed concrete block, the warehouse at Robins AFB has a roof consisting of precast channel decking resting on cast-in-place reinforced concrete purlins, which are spaced 8 ft c-c and frame into the reinforced concrete girders of the rigid frames.

These girders are continuous in the 400-ft direction of the building, except for an expansion joint near the middle. Girders span 67 ft, and frames are 33 ft c-c. Dead load averages 2.33 kips per lin ft of girder and live load 0.66 kips per lin ft. The design complied with the 1951 American Concrete Institute Building Code, which was revised this year (ENR March 1, p. 26).

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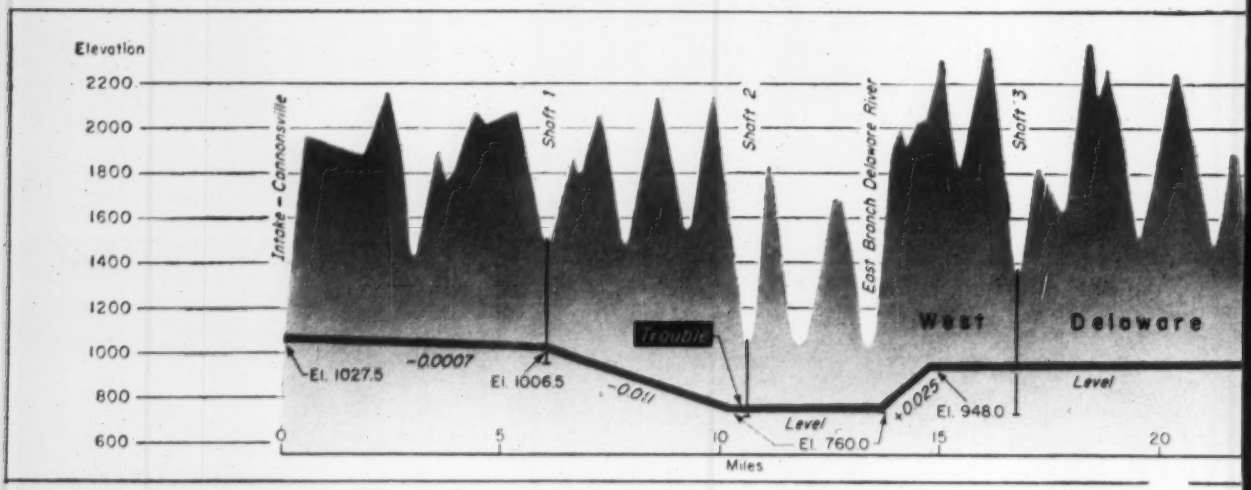


Faced with a tough water problem, contractor plugs, grouts and pushes on as

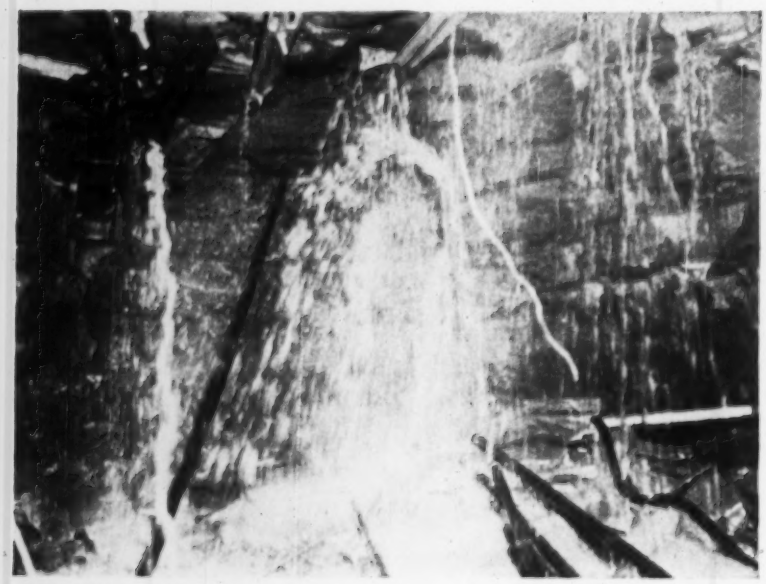
44-Mile Water

Everything was going fine on the $36-million West Delaware contract—the bore to tap West Branch flow for New York City's Board of Water Supply. Two shafts had been sunk to grade and turned horizontally, a third was under way, and up the line the tunnel from the Cannonsville portal had been driven three-quarters of a mile through the Catskill sandstones and shales.

Then, 200 ft west of Shaft 2, blasting in the west heading opened a large wet seam—wet to the tune of 400 gpm which gushed in to stop the miners in their tracks. Water poured from drill holes like from so many garden hoses.

Grouting—the usual sealing method—was ruled out since the weak horizontal layers of rock that form the roof of the tunnel would be pushed in by the pressure of grout. The solution, not a new one to the contractor or the board, was the construction of a 40-ft-long concrete plug. With pressure grout pipes set in place before pouring, the section could be poured as shown in the sketch, then grouted, drilled and reblasted. The desired result, obviously, is a dry tunnel. To accomplish this, 16,000 bags of grout at pressures up to 1,000 psi. had to be pumped in, and finally—on the eighth day of the round-the-clock operation—the water was stopped.

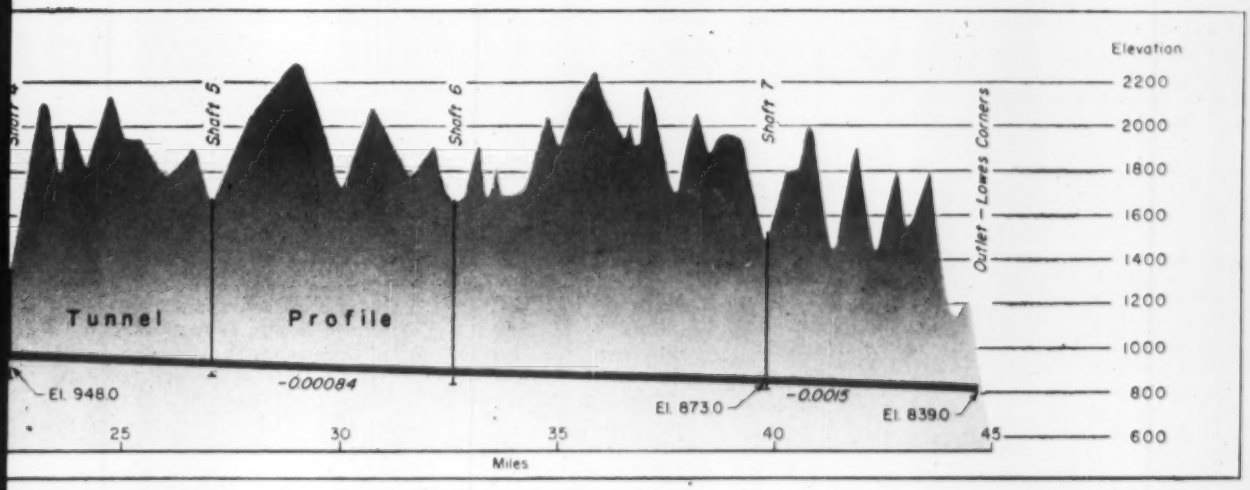
The difficulty encountered was not unforeseen. When Drake-Grafe-Tecon-Winston-Conduit prepared to bid the job last fall, the novel setup of bids (ENR Nov. 3, 1955 p. 92) on a lin ft basis, rather than upon unit prices for excavation or concrete lining, provided for such extras as concrete bulkheads needed to meet unusual water conditions.



TROUBLE SPOT—Blasting opened a wet seam which deluged the miners with enough water to supply a town of 5,000. Tunnel progress here was stopped cold.

• **Tunnel progress**—Aside from the minor flood near Shaft 2, progress in shafts and the tunnel from the intake has been good. The usual cycle of drill-blast-muck is driving forward in the inlet heading at an average rate of 54 ft per day. The six-drill jumbo cuts a 53-hole pattern which pulls about 10 ft per advance. Air-driven muckers have replaced the electric ones used on earlier tunneling here.

With an expected completion date of 1960 for the two tunnel contracts now under way, project superintendent Clancy O'Dell reports the work about 10% complete. A common construction headache persists, though—the tight steel situation may hold up delivery of permanent head-frames and roof-support steel. Work is currently proceeding using temporary frames and a reserve supply of roof steel, but without permanent set-up, further tunnel progress from shafts will be slow. The permanent head-frames were expected this month.



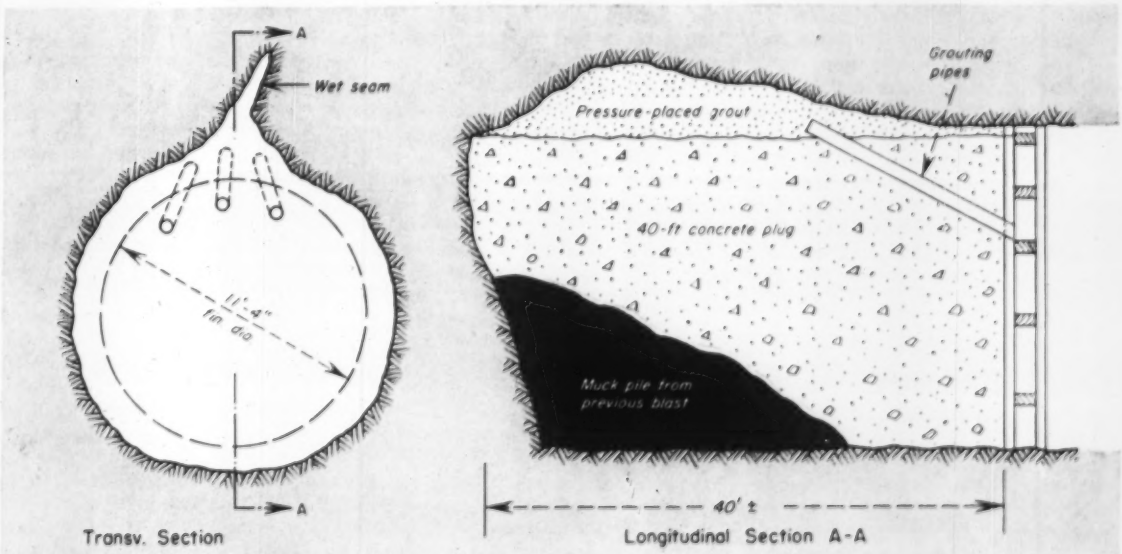
Tunnel Hits Its First Snag

Hoping to net a saving over the cost of a sheer wall excavation, the contracting combine's chief engineer, R. P. King, brought in shovel and dozer to make an open cut down to bedrock on Shaft 3. Taking advantage of a favorable side-hill slope, the crew cut down 62 ft to rock with only minor trouble from groundwater. Formed up from the bottom of the excavation, the shaft collar has been poured and backfilled. Balance of Shaft 3, about 400 ft in rock, will be sunk by the usual shaft-sinking method. Although King estimates the open-cut method cost almost as much as the other approach, it took less time, resulted in a better job.

• **Construction side of bid setup**—Other extras, besides bulkhead concrete and grout cement, included the roof-bolted steel straps and segmented rib steel supports. Rib steel, usually called for in wet, weak-rock sections, has been needed only in a few spots—roof bolting has proved sufficient along the rest of the 11-ft-4-in. circular tunnel.

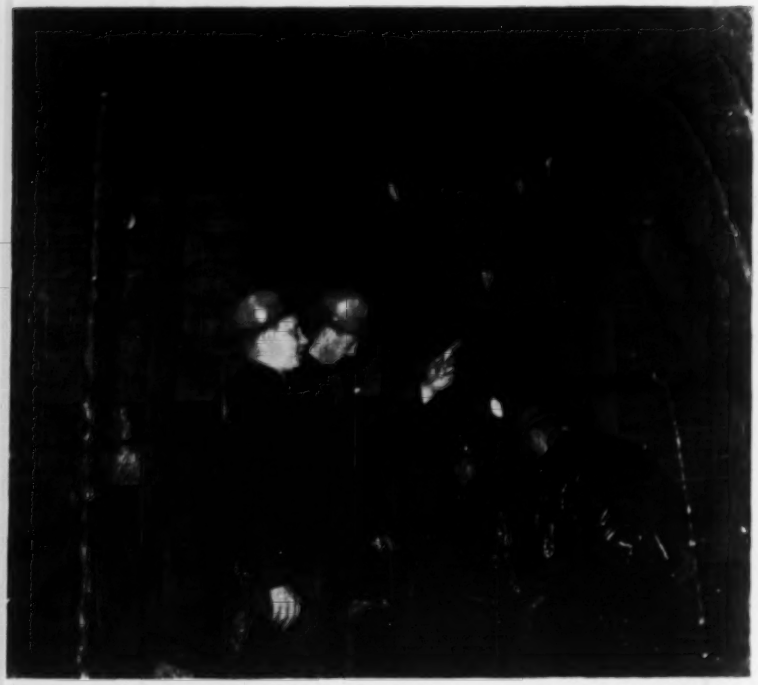
As for the setup of the job on a lin ft basis with extras, engineer King is not sold on the idea. Designed to simplify estimating, the arrangement makes twice the work for the contractor, he says, since a record of costs by volume units must be kept anyway. From the standpoint of the board, estimates of work completed—the basis for interim payments—are easier to prepare by the new method, which also eliminates difference of opinion in case of "over-break."

• **Tunnel planning and design**—Preliminary surveys for the West Branch tunnel got under way in 1953, with USGS maps supplying basic information for the study of possible intake, outlet, and shaft sites. With the aid of photogrametric surveys by Lockwood, Kessler and Bartlett, a tentative



CONTRACTOR'S ANSWER—40-ft-long concrete plug, with grout to be pumped into the seam after concrete set. This was done by setting vertical circular form, with grout pipes in place before pour. Eight days and 16,000 bags of grout were needed.

. . . Water tunnel carries too much water, too soon



FORMING UP FOR THE POUR, while water flows from grout pipes. Grouting pressures up to 1,000 psi were employed in round-the-clock operation.

location for the dam was selected, and the outlet portal was set at the east end of the Rondout reservoir, 44 miles from the intake.

Next step—choice of the intake site—was made with one eye on the possible site itself, and another on the tunnel line, roughly set by the choice. At Cannonsville, topography and geology pointed to a spot five miles upstream from the dam. Practically no "dead storage" results from the upstream selection since the West Branch gradient is low, and the tunnel line chosen is two miles shorter than if the intake were set close to the dam. With adequate area for plant setup and rock rising steeply from the valley floor—to ensure the necessary cover for the tunnel with a short approach channel—the spot was a natural.

Meanwhile, the "other eye," the one watching the tunnel line set by the upstream intake, saw an equally favorable picture. In plan, the line could be reasonably straight without hitting built-up areas, costly from the standpoint of shaft site right-of-way. Seven shafts of reasonable depth at fairly level sites were spotted on the preliminary profile at intervals not exceeding seven miles—experience here has shown this spacing to be economic limit of tunnel driving for maximum efficiency. Ease of shaft site access was also insured by the selected line.

There was one hitch in the scheme—deep erosion in the valley of the Delaware's East Branch has cut the bed-rock floor to a low elevation. If a uniform tunnel gradient were adopted from the intake—the most desirable condition—borings indicated that the necessary rock cover would not exist at the intersection of the tunnel with this valley. In fact some portions of the tunnel would lie within the glacial soils that have partially refilled the valley.

To insure adequate cover, a portion of the tunnel between Shafts 1 and 3 was designed as an inverted siphon.

Carrying capacity of the circular section, which was designed with an average of 11 in. of concrete lining, is over 500 mgd. The expected yield of the reservoir is only 310 mgd. Preliminary estimates for the job indicate a capital cost of $450,000 per mgd of yield.

• The overall picture—The work currently under contract is only a part of the project, with history dating back to a 1909 report. The $140-million Cannonsville job is the third stage of a three-stage operation; the second stage is nearly done (ENR Feb. 16 p. 194). Other phases of Cannonsville still to be let will include the dam itself and contracts for 24 miles more of tunnel, four shafts and the outlet portal. Main section of the dam will be earthfill, about 175 ft high and 900 ft long. Studies are in progress to determine whether a concrete cut-off wall will be needed. Board Senior Geologist Thomas Fluhr points out that location of the dam at a point where a large knoll constricts the normal width of the West Branch valley makes possible considerable saving in the dam's length. The construction of an impervious blanket on the upstream face of the knoll will render it usable as a sort of pre-formed section of the dam. The reservoir created will extend six miles upstream from the dam, flooding out several small villages including Cannonsville, and will have a capacity of about 143 billion gal.

Other sidelights of the dam and reservoir include relocation of many miles of state and county roads, and the construction of appurtenant bridges.

• Local problems—While contracting forces are busy with watery seams and hard-to-get steel, Board of Water Supply people have problems of a different kind. The first attempt to get the dam phase out of the preliminary design stage—a contract for access roads, bridges and foundation explorations—got a courteous "No, thank you" from contractors (ENR June 7, p. 19). Since this "false start," the board has decided to drop the explorations from the scope of the job, which should be out for bids shortly.

Two additional contracts covering the remaining 24 miles of the tunnel are still to be let. Pending the establishment of wage rates for tunnel work in Sullivan County between contractors and representatives of labor, no date has been set for advertising of bids.

• End of the line?—While the work of the Board of Water Supply is not near being finished—the $140-million Cannonsville project is not due to be done until after 1961—the board may be approaching the "dollar barrier" for long-distance water supply. But Cannonsville will boost the safe yield of the supply to 1,820 mgd—enough to meet 2000 A.D. demands. And right now the year 2000 looks a long way off as far as the Board of Water Supply is concerned.

Deputy chief engineer N. Leroy Hammond is in charge of construction for the board, whose chief engineer is Stanley M. Dore. Board president is Irving V. A. Huie.

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The job Byron Craig was talking about is the Newark Bay-Hudson County Extension of the New Jersey Turnpike, a three mile stretch of ramps, turnoffs, interchange lanes and service area cutoffs that connects the busy toll road with the Holland Tunnel.

"This job was a real challenge," continues Craig, "A typical pour would range from 4' to 14½' to 19', back to 15' - 8", then up again to 23'. The Flex-Plane Self Widener worked these variable width slabs as easily as though it were a straight pour. What's more I find Flex-Plane builds a 'paving man's' machine. It's strong and sturdy at its widest width, and it comes in a width selection that makes sense."

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Byron Craig, Paving Superintendent, shows type of progress chart he used to map pours.

▲ Typical slab section. Note unusual tapering. Brewster was able to maintain above average pour with a single Flex-Plane machine without a spreader.

Here machine works narrow take off strip in contracted position. Three mile stretch had 10 such strips plus 8 ramps and one underpass. ▶

Usual procedure is dig, then build—but switching the sequence saved $50,000 on falsework for a 218-ft concrete dome

1. Columns (arrow) were cast and backfille

3. Plywood-lined in part, but mostly exposed earth . . .

4. The hill was covered with concrete,

Dome Roof Formed on Mound Needs N

Reversing the usual sequence of first excavating, then building, the contractor on Albuquerque's new dome-roofed civic auditorium rounded off a natural mound of earth on the site and cast the 218-ft thin-shell concrete roof on the convex surface. He then dug away the earth beneath, leaving the dome standing clear on a ring of columns which had been built and backfilled earlier.

Before making the final decision to follow the unusual procedure, Ferguson, Stephenson & Associates, Albuquerque architects who designed the $1-million project, considered two other methods: (1) erecting steel-supported formwork; (2) casting the dome on grade, then hoisting it lift-slab fashion. The mound-forming method got the nod on the basis of an estimated $50,000 saving.

First step in the job was column construction. The builders excavated a deep trench around the periphery of the mound and cast 22 individual reinforced-concrete spread footings and rectangular columns. The columns range in height from 24 ft to 42 ft. Depth in the radial direction varies from 4 ft at base to 6 ft at top. Thickness is a uniform 18 in.

After the columns were backfilled, the next step was to prepare the mound—an easy-to-work mixture of sand, gravel and natural binder—as a form surface for the underside of the dome. The builders applied a layer of fine stone, compacted it with rubber-tired and sheepsfoot rollers, finished it off with a hand-pushed lawn roller. The resulting surface was smooth enough for much of the shell interior; however, for a 30-ft peripheral belt to be exposed in the completed building, they laid 2-in. plywood on the mound.

The spherical dome (radius 256 ft) rises 23 ft from spring line to underside of the shell at the center. Thickness of the concrete within a 160-ft-dia circle about the center is 5 in. Outside the circle, the shell thickens gradually, sweeping smoothly into the ring girder, 24 in. thick and 36 in. wide. Shell is reinforced in both radial and circumferential directions.

It took 1½ weeks to place the shell concrete (about 1,000 cu yd). Ready-mix operators chuted the first of four

then . . .

then . . .

No Shoring

concentric pours directly into place. Second and third lifts were handled by crane, and the final lift was crane-to-hopper-to-buggy, the buggies traveling on wood runways.

After the concrete had set, the ring girder was prestressed with 655 turns of high-strength wire, tensioned to 140,000 psi. Supplied under specification ASTM A227-47, the wire has a yield-point strength of about 190,000 psi. Using a tractor-drawn tensioning drum that applied stress with a dynamometer instead of a die, a subcontractor wound the steel into a channel cast into the edge of the heavily reinforced girder. This work was done by Crom, Inc., of Gainesville, Fla., manufacturer of the equipment. Turns were anchored individually and each layer grouted. When all turns were in-place, bars that had been left projecting from the girder were bent over the stressed collar and the groove was filled with concrete.

The next step was excavation of the mound, no longer needed as support for the shell. Shovels and bulldozers dug out 120,000 cu yd of earth, exposing the columns and interior of the dome. The remainder of the job was completed by conventional methods.

The finished auditorium has a permanent seating capacity of 3,500 in a balcony surrounding the 142 ft-dia concrete arena floor, and room for 2,500 temporary seats on the arena floor itself. Balcony and arena cover the entire area under the dome. Enclosing this area is a wall composed of an 8-in. concrete block wainscot, a metal acoustic middle section and a top band of clerestory windows just under the ring girder.

Outside this wall, an 8-ft corridor girdles the auditorium at rear and sides. Departing from its circular course at the front, however, the 12-in. brick outer wall of the corridor encloses the lobby, mezzanine and service rooms adjoining the main

2. **A natural mound was shaped, tamped, smoothed . . .**

5. **Excavated to expose the dome and columns.**

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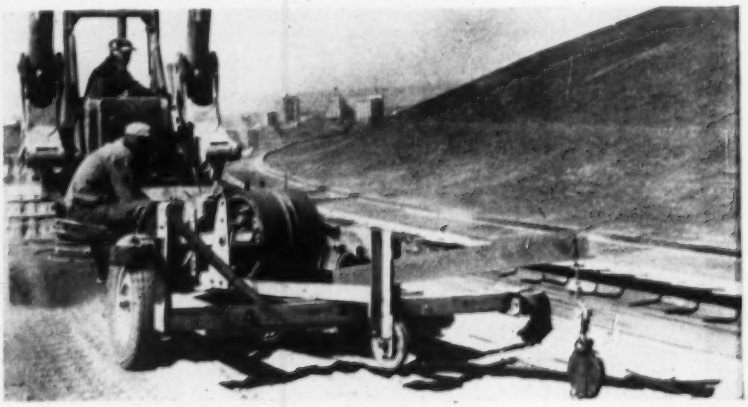
RING GIRDER was formed with a channel for prestress collar.



PRESTRESSING DEVICE wound 655 turns of high-strength wire, tensioned to 140,000 psi, into the channel in the ring girder. Tension was applied by a dynamometer.

EXCAVATION began on the fringes of the hill before all the concrete was in place. 120,000 cu yd were dug out to expose columns and dome and bring the site to grade.

auditorium. Total floor area is about 70,000 sq ft.

Acoustic treatment of the auditorium includes suspended sound baffles and a conical ceiling of acoustic tile. The dome exterior is topped with 2 in. of rigid insulation and a built-up roof. The building is air-conditioned. Catwalks provide access to amplifying equipment, air-conditioning ducts and lighting facilities.

Gordon Ferguson was the partner in charge for Ferguson, Stephenson & Associates. General contractor was Lembke, Clough & King, of Albuquerque.

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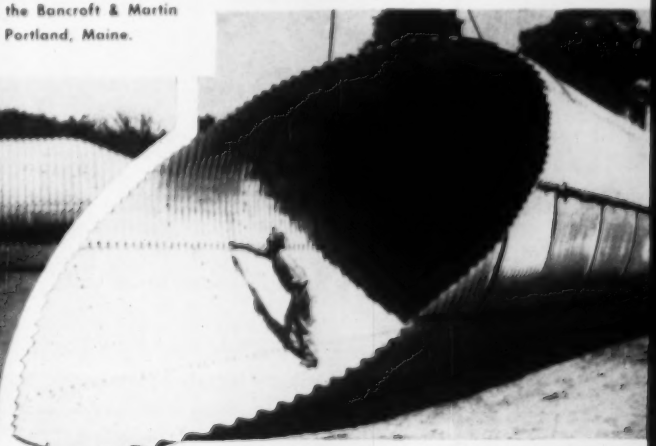

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UNITED STATES STEEL EXPORT COMPANY, NEW YORK

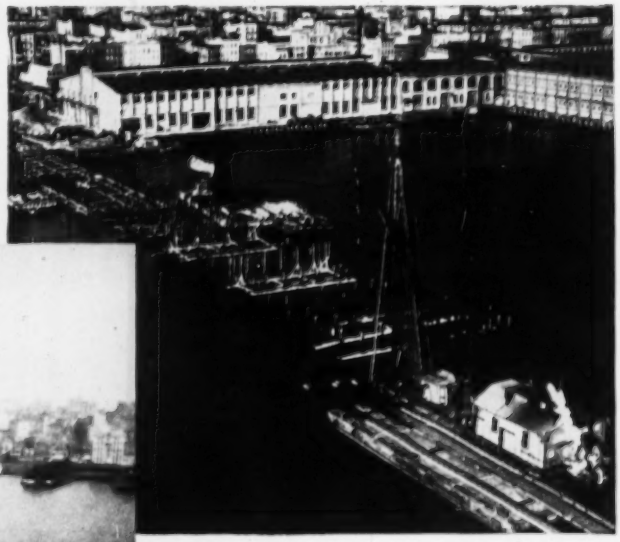
AMBRIDGE *Sectional* **PLATE** USS

UNITED STATES STEEL

PORT OF NEW YORK'S NEWEST, WIDEST PIER

rests on piles driven by McKIERNAN-TERRY HAMMERS

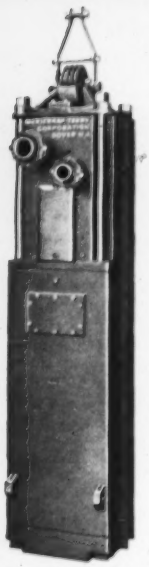
Pier C at Hoboken, New Jersey, operated by the Port of New York Authority, and completed in March 1955, is 700 ft. long and 328 ft. wide; and rests on steel H-beam piles driven through dense, cohesive silt and sand to solid bedrock which is 140 ft. below mean low water at its offshore end



and 90 ft. below mean low water at the bulkhead line.

The contractor, J. Rich Steers of New York City, made sure that the many required piles would be driven without a hitch by using McKiernan-Terry Pile Hammers exclusively; and employed 11B3 Double-Acting Hammers and S8 and S10 Single-Acting Hammers for the purpose.

Write for bulletins explaining the many superior features of McKiernan-Terry pile-driving equipment.



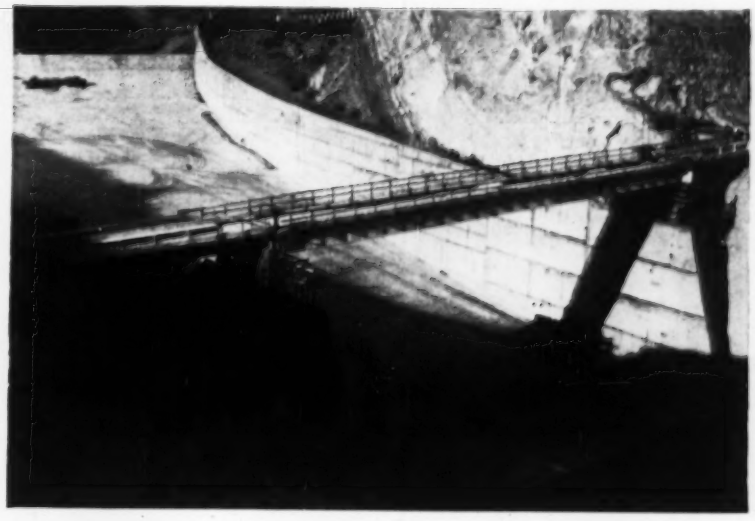
Single-Acting Pile Hammer

11B3 Double-Acting Pile Hammer

McKIERNAN-TERRY CORPORATION
MANUFACTURING ENGINEERS
80 Richards Ave., Dover, N. J.
Plants at Harrison, N. J. and Dover, N. J.

MK-378

Cranes Move in Unison to . . .



. . . Erect 122-Foot Precast Span

A bridge that contains one of the longest spans for concrete girders to be both precast and prestressed has been completed at Santa Felicia Dam near Ventura, Calif. Included are four 122-ft-long T-girders spanning the dam spillway.

The job effectively illustrates the usefulness and economy of prestressed members of such length. And it also demonstrates dramatically the careful handling techniques that must be followed. One erection subcontractor allowed a girder to tip, shattering the concrete member. A second erection outfit left the job after moving a girder only a few feet. A third—Reliance Equipment Co.—finally moved and lifted the four girders successfully.

The long T-shaped beams are 4 ft 9 in. deep and have a 6-in.-thick stem with a 36-in.-wide top flange. The units were post-tensioned with seven cables, each having 12 wires of ¼-in. dia. The cables are in metal sheaths and are arranged in parabolic shape in a vertical plane. At midspan, the cables were laid one on top of the other with no clearance between—although there was 4-in. concrete cover at the bottom. A jacking force of 56,500 lb was imposed on each cable. With shrinkage and stress relaxation, the residual effective force is figured to be 75,000 lb.

The bridge also has two shorter spans of 31- and 51-ft lengths with prestressed T-girders.

The one-lane, 12-ft-wide structure will be used as a service facility and will not be open to the public. Piers are built for an additional 12-ft width should an additional lane be required at a later date.

At present the bridge has no wearing surface. The upper flange of the girders serves instead. The units were tied together by transverse diaphragms post-tensioned by ¾-in. rods. The bridge was designed for an AASHO H-15 truck loading.

The four 38-ton units were cast on the spillway apron. After post-tensioning they had to be moved down the spillway and lifted some 60 ft over the spillway wall to the piers. Part way through the moving maneuver, the girders had to be set down so that the cranes could get on the other side for the lift.

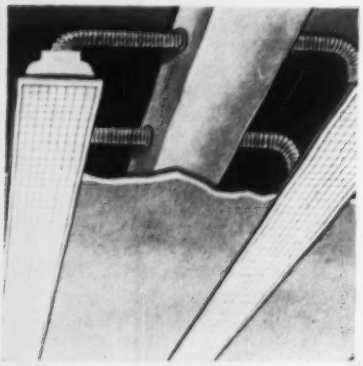
When the first girder was moved, it was inadvertently allowed to tip and shatter on the spillway floor. The accident occurred when one crane sling was slack and the other crane started lifting. The member had to be recast, which substantially delayed completion of the job.

During the successful lifting operations, a 3-ft-high "stiffleg" was mounted on top of the girder at each crane pick-up point (7 ft from the end of the member). The effect of this was to lower the center of gravity of the entire assembly and reduce the tendency to tip. Then with split-second timing to assure simultaneous pick-up and using rolling outriggers on the front of the cranes the moves were successfully made.

The prestressed girder design was bid in competition with other type bridges. Successful low bidding contractor, Howard Hays, Bakersfield, Calif., bid $40,000 for construction of the girders, piers, abutments, railing and fencing. This was $14,000 lower than the next bid for a steel Bailey bridge.

The dam (ENR Sept. 8, 1955, p. 43) and bridge are facilities of the United Water Conservation District, Santa Paula, Calif., for which Walter P. Price, Jr., is chief engineer and general manager. The structure was designed by T. Y. Lin and Associates, Los Angeles, with Felix Kulka and Herman R. Reuter, design engineers. Superintendent for the contractor was A. W. Douglas, with R. R. LeVitt as lifting and rigging consultant. Western Concrete Structures, Los Angeles, was subcontractor for post-tensioning work.

New Products



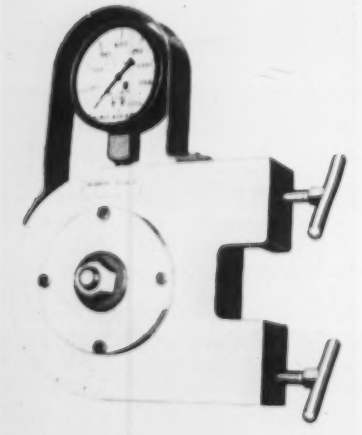
Air Diffuser and Luminaire Combined in Single Fixture

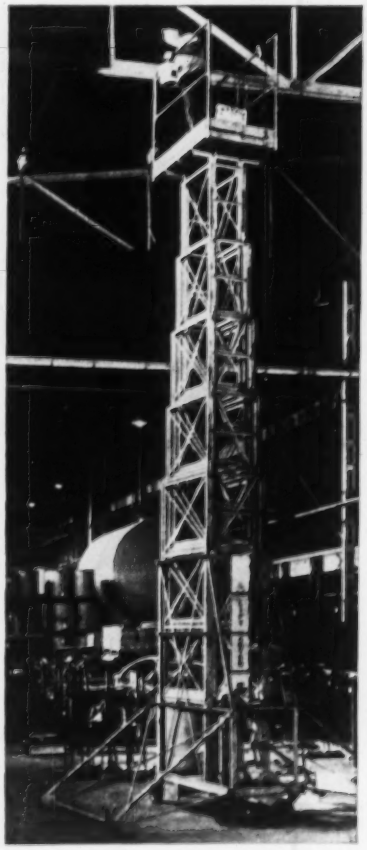
Two manufacturers have brought their particular specialties together in a combination air diffuser and luminaire called Multi-Vent Trofferlite. The air diffuser is completely built into the fixture, with no effect on the appearance of the unit. Adjustable to any type of dropped ceiling, the fixture is made with either egg-crate or baffle-type louvers or without louvers. The egg-crate louvers are available in either polystyrene plastic or steel. Benjamin Electric Mfg. Co., Des Plaines, Ill.; Pyle-National Co., 1334 N. Kostner Ave., Chicago 51, Ill.

Impact-Wrench Calibrator Reads Bolt Load Directly

Skidmore-Wilhelm's portable calibrator for pneumatic impact wrenches measures bolt tension directly in pounds when bolt, nut and washers are assembled in the 50-lb device and tightened with the wrench to be adjusted. Air pressure or tightening time can then be regulated to apply the torque needed for the desired bolt tension.

The calibrator takes ¾-in., ⅞-in. or 1-in. bolts 2½ in. or more in length. Built-in clamps anchor the instrument to a column or beam. The price fob Cleveland, including a wood case, is $345. Skidmore-Wilhelm Mfg. Co., 442 Green Rd., Cleveland 21, Ohio.





Telescoping Lift Raises Maintenance Man 40 Feet

A one-man-operated hydraulic platform lift called Ski-Ride telescopes to any height between 9 ft and 40 ft and locks in position while a workman does maintenance or repair jobs from a 28x48-in. work platform on top of the mast. The lift rolls from job to job on four 10-in. wheels. Capacity of the unit is 500 lb.

Safety features include steel rails and a toe board around the work platform, dead-man controls in the base and on the platform, and outriggers that open to 10 ft 9 in. Four bronze-bearing roller chains support each section of the mast.

In closed position, the lift is 6 ft 7 in. long, 2 ft 7 in. wide and 8 ft 9 in. high (7 ft 6 in. for the 35-ft model). Other models can be made to lift as high as 70 ft. Allied Mfg. & Sales Co., 3101 W. Grand Ave., Chicago 22, Ill.

Automatic Field Transcriber Gives Permanent Records

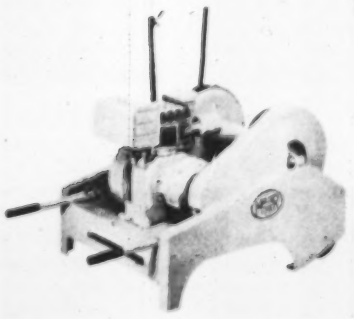
Automatic permanent recording of time-settlement data from soil consolidation tests is featured by a new field testing monitor. Recording instrumentation on the device includes a specially designed time-vs-deformation indicator and a compression detector said to be adaptable to most consolidometers.

The results are recorded on a circular chart, thereby tending to minimize human error in transposing field data to the usual square-root-of-time or log-time bases.

Each test appears as a curve on the circular chart. During the first hour the chart makes one full revolution, making possible settlement readings at 5-second intervals. After the first hour, revolution speed is automatically slowed to one revolution per day until stopped by the operator. K-W Autocon Recorder (Model 35). Tinius Olsen Testing Machine Co., 5653 Easton Rd, Willow Grove, Pa.

Half-Ton Hoist Added to Builders' Equipment Line

A newcomer to the Muller line of contractors' equipment is a hoist designed for small builders and roofers. Rated at ½-ton single-line pull at 200 fpm, the hoist has a 5½-in.-dia, roller-bearing-mounted drum 15 in. long, with 400-ft capacity for ½ in. manila



WHIP WEIGHT PROBLEMS and HAUL

BIGGEST LEGAL PAYLOADS

THE DUMP BODY WITH THE "INCH WORM TRACTION"

"Inch Worm Traction" lets you get out of soft spots by hydraulic power.

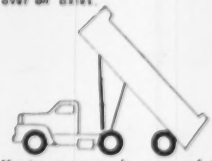
ANTHONY HYDRAULIC

Teleramic

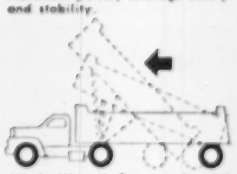
FRAMELESS Dump Trailer Units

A completely new way to get more profit producing Payload—a frameless dump trailer that is literally "a dump body on wheels!" Elimination of the conventional extra trailer frame and other unnecessary dead weight mechanisms, makes possible up to 4000 lbs. extra *legal* payload by using a single Anthony telescopic hoist of new Teleramic head-lift design. Hoist location over tractor driving wheels gives excellent traction for spreading. Sloping tailgate lets you stockpile high and clean. *Write or call today for the "Complete Frameless Story."*

Load and weight distributed best over all axles.



Maximum power, leverage safety and stability.



"Inch Worm" Traction for fill and spreading operations.

"Inch Worm" Traction for stockpiling and batch work.

THE MOST COMPLETE LINE OF TELESCOPIC HOISTS

ANTHONY COMPANY, Dept. 5640, Streator, Illinois

Please send me additional information on Anthony Teleramic Hoists used for the following body classifications.

☐ Contractor Bodies ☐ Rock Bodies

☐ Asphalt Bodies ☐ **FRAMELESS** DUMP TRAILERS

I have the following make and model of truck.

Name .....

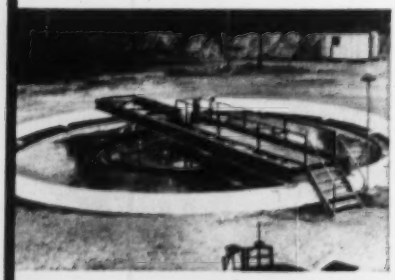
Firm .....

Address .....

City ..... State .....

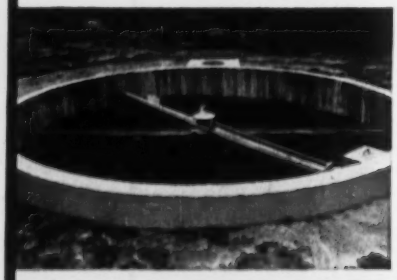
Yeomans manufactures the most complete line of Application-Designed sewage treatment equipment

which includes...

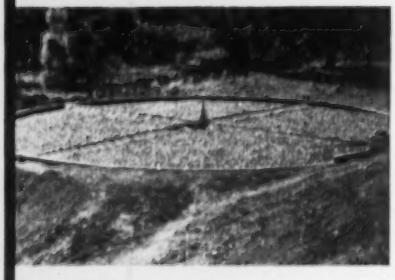


. . SPIRAFLO CLARIFIER for both primary and final clarification of domestic and process wastes. A clarifier of radically different design, the Spiraflo offers complete settleable solids removal; greater removal of finely divided particles; positive grease, scum oil removal; uniform velocity throughout tank; and straight wall design which reduces construction costs.

. . the CAVITATOR, a newly developed Yeomans unit for low cost treatment of both domestic sewage and industrial wastes. Perfectly suited for small communities, subdivisions, motels, resorts, schools and industrial plants, the Cavitator has excellent purification efficiency, extremely high oxygen transfer efficiency, and extremely low air requirements per pound of B.O.D. removed.



. . the WATER-WHEEL, a rotary distributor used with trickling filter systems in the secondary treatment of sewage. An exceptionally rugged, yet simple piece of equipment, the Water-wheel provides uniform distribution over the entire filter bed at all flow rates . . even the lowest. Costly accessories such as underground feed pipe, dosing chamber with siphon, center support, and mercury seal are not required.



. . YEOMANS ROTARY DISTRIBUTORS (both standard rate and high capacity). Standard rate units distribute evenly across the entire filter bed . . adjustable nozzles produce fine, well-aerated spray which carries down high volumes of oxygen. For high capacity filters, both the Yeomans high capacity type distributor and the Aero-Filter system are available.

Use this coupon to request any or all of the following technical bulletins:

- ☐ Yeomans Spiraflo Clarifier, bulletin 6791
- ☐ the Cavitator, 12-page booklet
- ☐ Water-wheel, catalog 6555
- ☐ Yeomans Rotary Distributors, bulletin 6504 . . also manual 6000

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YEOMANS, 1999-1 N. Ruby Street • Melrose Park, Illinois

manufacturers of: distributors • clarifiers • mechanical aerators • pneumatic sewage ejectors • digesters • centrifugal pumps

rope, 1,200-ft for ⅝-in. wire rope, and 2,700-ft for ¾-in. wire rope. Separate levers are provided for clutch and 16-in. brake. A spring-loaded device on the brake holds the load when the clutch is released. Power is supplied by a Briggs & Stratton air-cooled engine. Engine rating is 7.0 hp at 2,400 rpm, 8.1 hp at 3,000 rpm. MUELLER MACHINERY CO., INC., METUCHEN, N. J.

Slip-On End Covers Designed To Cut Stored Pipe Corrosion

A new wrinkle for guarding stored pipe and tubing against internal corrosion—neopreme slip-on end caps—is now on the market. Teamed with a small amount of dehydrating agent, the caps are designed to provide an effective seal against air, moisture, fumes, dust and small animals. Neopreme is used because of its durability under the action of oil, acids and other unfavorable conditions.

Two types of caps are currently available—a lightweight roll-on cap for pipe of 2- to 10-in. dia, and a heavier slip-on cap for diameters up to 20 in. Thickness of the slip-on covers is ⅛ in.

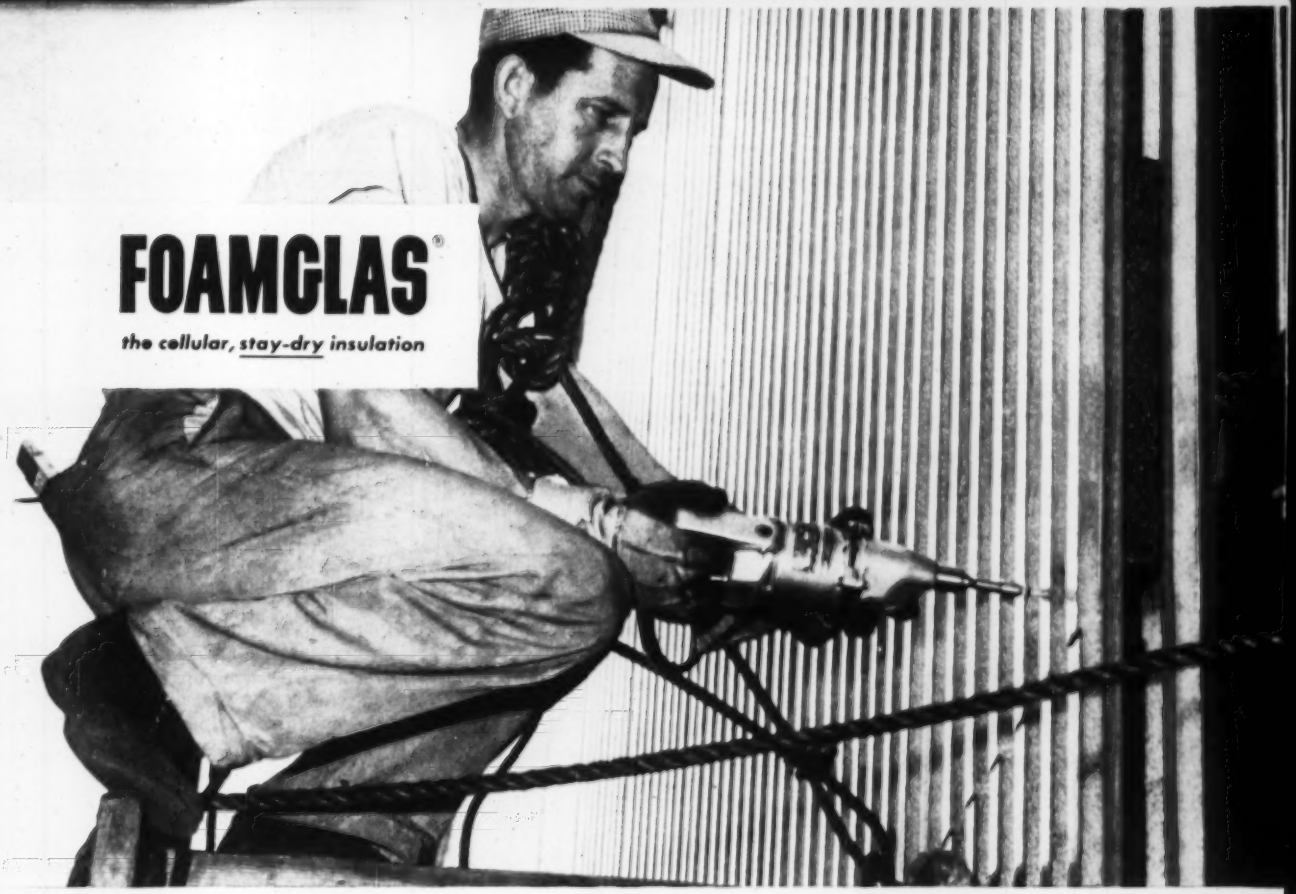
Prime application of the protective caps is with threaded pipe ends, but they can also be used for protection of heat exchanger tube bundles, well casing and with fittings in the petroleum industries. PROTOKAP, INC., 625 WEST BUILDING, HOUSTON, TEXAS.

Vibration Mount Has Twin-Screw Leveling

Twin leveling screws permit adjustments up to ¼ in. in the Universal Lev-Elasto Damper, an anti-vibration mount for machinery. The top plate of the mount is covered with a felt pad, the bottom plate with ribbed neoprene. Leveling screws are between the two plates. The top plate has a tapped hole for bolting down machinery. However, a machine can be cemented or merely rested, unattached, on the mount. The load range of nine available sizes varies from 65 lb to 12,000 lb. Prices run from $6 to $35. KORFUND CO., INC., 48-23M 32ND PL., LONG ISLAND CITY 1, N. Y.

FOAMGLAS®

the cellular, stay-dry insulation



Duquesne Brewing's 3½" thick curtain wall was erected at job site. Ribbed aluminum back-up sheet was placed against supporting members and secured with drive screws. FOAMGLAS blocks were placed against back-up sheet and temporarily secured with adhesive. Ribbed aluminum facing sheet was then set in place and secured with self-tapping screws on 8" centers driven completely through facing sheet, FOAMGLAS and back-up sheet. Drilling through the FOAMGLAS did not impair its inherent moisture resistance.

At Duquesne Brewing Company's new bottling plant . . .

This FOAMGLAS insulated aluminum curtain wall went up fast—cost only $1.31 per square foot!

This ribbed aluminum curtain wall "sandwich"—insulated with a core of strong, moisture-proof FOAMGLAS—was erected faster than conventional walls at a cost of just $1.31 per square foot. The Duquesne Brewing Company of Pittsburgh, Pa., used it to build a new bottling plant designed and engineered by Peth and Reed, Pittsburgh.

Selection of FOAMGLAS as the core insulation was doubly important. First, its unusual strength, dimensional stability and rigidity helped make stronger wall panels—eliminated possible sagging or buckling after installation.

Most important, however, was the FOAMGLAS structure of minute glass cells, each a dead air insulating unit permanently sealed against moisture. Duquesne faced a possible condensation problem in the bottling plant walls. To solve it, the aluminum siding's ribs were designed to serve as small "chimneys" for condensation drainage. That meant moisture would drain across the surface of the core insulation. Only FOAMGLAS, being inherently moisture-proof, could serve under these conditions . . . and could be counted on for a constant insulation value for the life of the building.

Whatever *your* insulating problem, it will pay you to rely on FOAMGLAS for dependable, long-life insulating service. It's moisture-proof . . . inorganic . . . incombustible . . . dimensionally stable . . . strong and rigid . . . light in weight . . . acid-proof . . . vermin-proof. Prove these properties to yourself with six simple tests easily performed in your own office. Send for a FOAMGLAS sample and complete testing directions today. Address . . .

Future enlargement of the Duquesne Brewing bottling plant can be accomplished economically with aluminum-FOAMGLAS curtain wall. Existing wall can be removed, additional structural members erected and dismantled wall sections re-used to enclose expanded area.

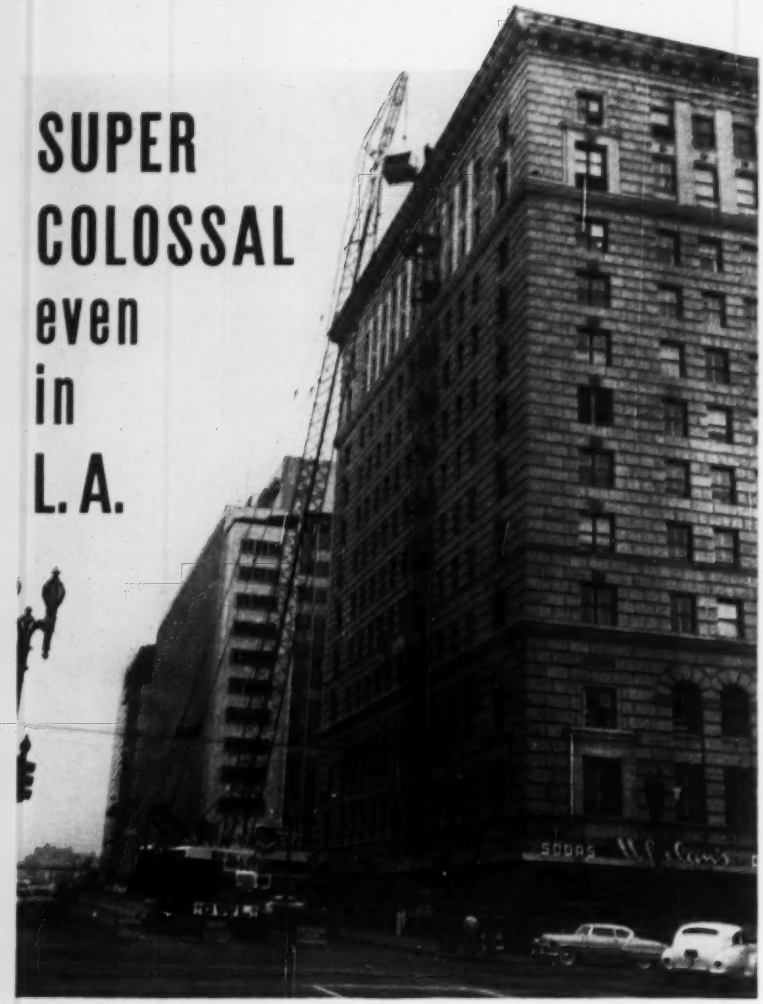
Pittsburgh Corning Corporation

Dept. K-96, One Gateway Center
Pittsburgh 22, Pennsylvania
In Canada: 57 Bloor St. W., Toronto, Ontario

PC®

also manufacturers of PC Glass Blocks

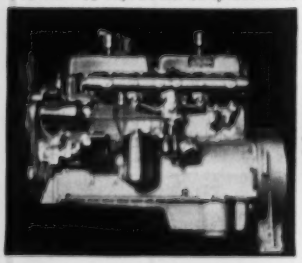
SUPER COLOSSAL even in L.A.



Los Angeles probably saw its highest hoist—10 tons of refrigeration machinery lifted atop the 12-story Roosevelt Bldg.—by a Waukesha-powered, 50-ton American Hoist & Derrick Co. 795-Crane. The self-lifting boom, with its stinger, was 190 ft. high. The Crane is mounted on a Cook Bros. CT-450 Carrier which is also Waukesha-powered. The Owl Truck & Construction Company of Compton, California, own and operated the crane. The job took only one day, instead of the estimated five days needed with a stiff leg.

WAUKESHA ENGINES

Powering Crane (boom)—140-GK
Waukesha Gasoline, six cylinders, 4½-in. x 5½-in., 525 cu. in. displacement.



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50th ANNIVERSARY Waukesha 1906-1956

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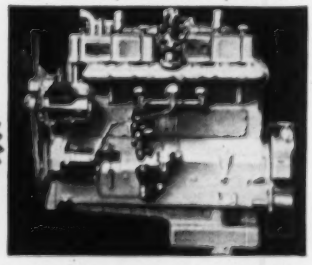
Powering the Carrier—145-GKB
Waukesha Gasoline, six cylinders, 5¼-in. x 6-in., 779 cu. in. displacement.



WAUKESHA MOTOR COMPANY, Waukesha, Wisconsin • New York • Tulsa • Los Angeles

Publications

Plastic pipe—Special qualifications of polyethylene plastic pipe are given in 8-page bulletin CE-57 along with flow charts, installation instructions and information on uses of the material. Weights, maximum working pressures, sizes and prices are also tabulated. SUPPLEX CO., GARFIELD, N. J.

Tank, trench and pool linings—A new brochure describes "Hydromat" asphalt liners. The liners are weather-coated felts on a core of blended asphalt and specially selected fibrous and filler materials. Bulletin H-56, W. R. MEADOWS, INC., 7 KIMBALL ST., ELGIN, ILL.

Process filtration—A continuous vacuum-type horizontal filter is described in detail in a new 4-page bulletin recently released. Complete with operation flowsheet and photographs, the bulletin gives outstanding features, design, operation, sizes and capacities of the rotary filter. Among features highlighted are cost of installation—units up to 15-ft dia are shipped complete—and high rate of slurry feed. BULLETIN NO. 7201, DORR-OLIVER, INC., BARRY PLACE, STAMFORD, CONN.

Sewage equipment—A 63-page presentation covering a wide range of sewage treatment equipment has just been released. The booklet gives details, drawings and descriptions of typical units in treatment processes. Also included are figures on standard sizes giving capacity and power requirements. Among units covered are various types of screens, grit collectors and washers, sludge collecting equipment, controlled flocculation facilities, equipment for biofiltration plants and auxiliary mechanisms. Copies of the catalog, designated No. 905, may be obtained from JEFFREY MFG. CO., COLUMBUS 16, OHIO.

Protective coatings handbook—A 30-page booklet, Tygon Protective Coatings Bulletin No. 760, covers the use of Tygon coatings in mild and severe corrosive service. The Tygons are protective coatings designed to protect surfaces, which are exposed to attack by acids, alkalis, oils, water and alcohols. The new manual is designed to be used as a work book and gives data in the form of charts, tables, diagrams and illustrations. Included is information on surface preparation, painting, application methods, and maintenance instructions for the complete family of coatings and primers. Limitations of each coating are given as

with Monotube Foundation Piles...

CONTRACTOR SAVED 19 DAYS

PILE DATA

Type—Monotube
Diameter—12 inch
Gage—7
Number of piles—1438
Length—up to 90 feet

Constructed for:
United Illuminating Co.,
Bridgeport, Conn.

Engineers:
Jackson & Moreland, Inc.,
Boston, Mass.

General Contractor and Foundation Contractor:
C. W. Blakeslee & Sons,
New Haven, Conn.

One of the two standard rigs, shown here driving batter piles. Any specified batter is easily met with Monotubes.

Here's economy in industrial work.

Light weight, easy handling and fast field-splicing of Monotube piles helped this contractor reduce anticipated driving time by 19 days. Piles were driven at the rate of 2500 feet per shift using two rigs. Learn how Monotubes can help *you* save time, cut cost. Write The Union Metal Manufacturing Company, Canton 5, Ohio, for detailed catalog information.

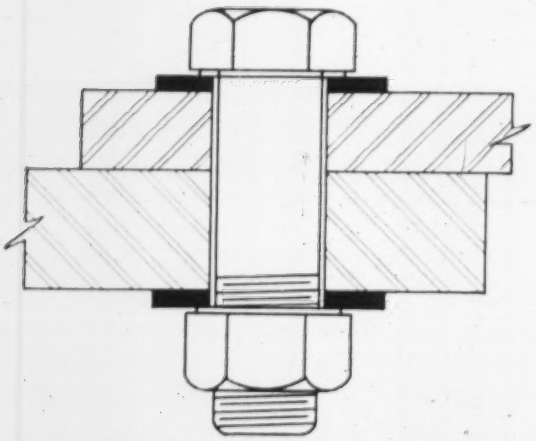
Architect's rendering of Bridgeport Harbor generating station, Bridgeport, Conn.

50 FIFTIETH ANNIVERSARY 1906-1956

UNION METAL
Monotube Foundation Piles

Specify—
MIL-CARB*
TRADE MARK

CARBURIZED WASHERS



for GREATER CLAMPING FORCE in High Strength Steel Bolting

Structural engineers and contractors *know* today that high strength steel bolts, *with properly hardened MIL-CARB* steel washers,* provide a form of steel jointing superior to riveting in many ways . . . including faster, more economical construction.

Don't overlook the fact that *no bolt is any better than its washers!* Don't let washers be the weak link in your steel framing construction chain. MIL-CARB carburizing permits *securing* and *holding* desired tension — eliminates "galling" or grinding of washer by the nut, *assuring permanent, uniformly strong, tight joints.*

MIL-CARB Washers are fabricated from Prime Carburizing Quality Special Soundness Steel to insure uniform quality control, always equal to or exceeding the rigid specifications for high strength bolted steel construction.

For your own protection and for uniformly sound construction, specify MIL-CARB* Carburized Washers and accept no substitutes.

Since 1887

MILWAUKEE WROT WASHERS

Distributed by

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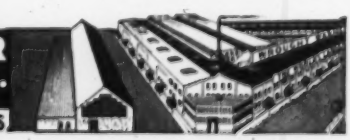
UNITED STATES STEEL CORPORATION

208 South La Salle Street • Chicago 4, Illinois

WROUGHT WASHER MANUFACTURING CO.

The World's Largest Producer of Washers

2224 S. BAY ST., MILWAUKEE 7, WIS.



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. . . Publications

well as cost factors in a maintenance program. Also described is the care and cleaning of brushes and spray equipment. Plastics and Synthetics Div., The U. S. Stoneware Co., Akron 9, Ohio.

Lift trucks—Latest trends in lift truck design are shown in a 12-page brochure issued by the Hyster Co. The booklet is designed for quick reference of 25 different industrial truck models ranging in capacity from 1,000-30,000 lb. Hyster Co., 2902 N. E. Clackamas St., Portland 8, Ore.

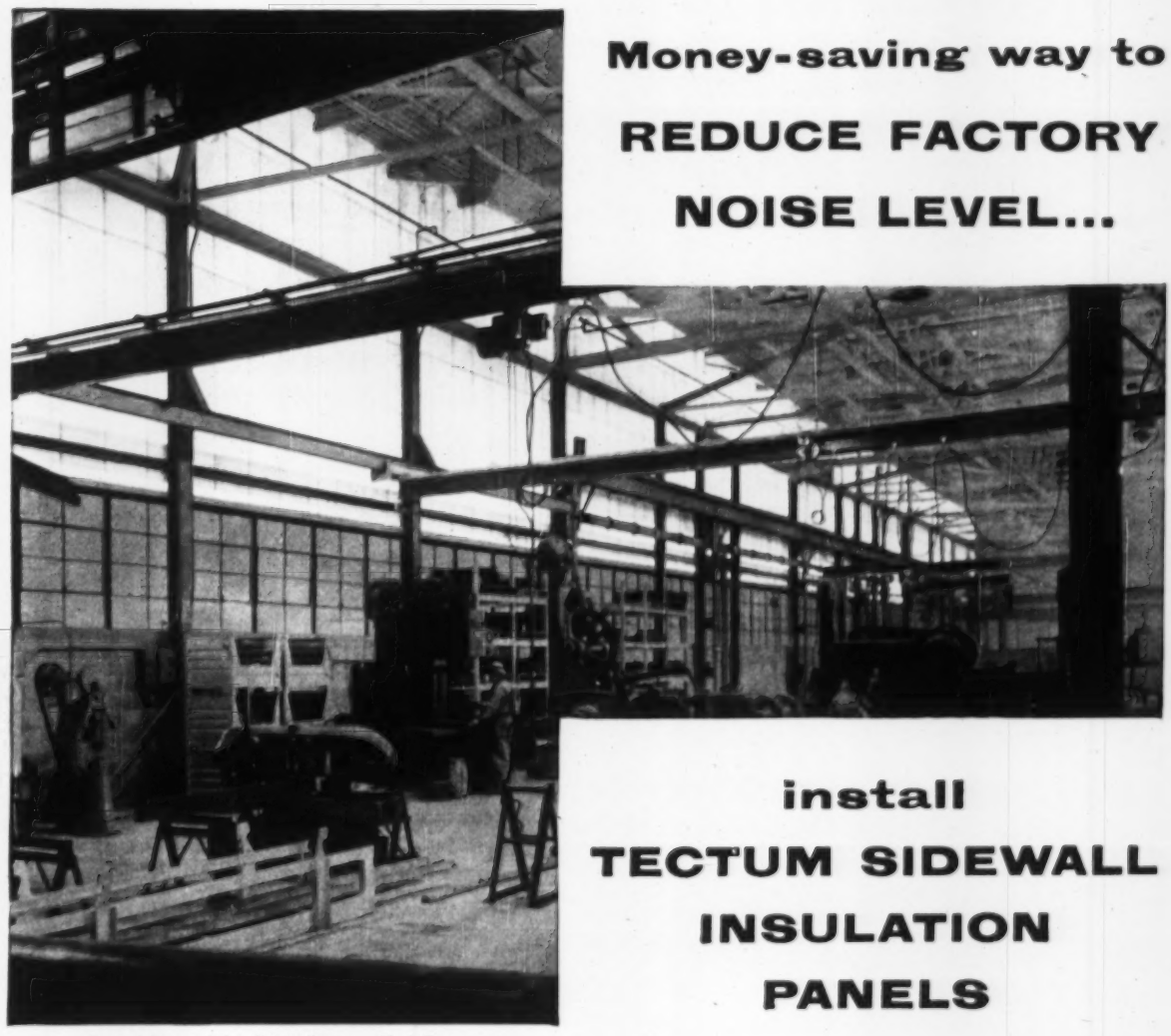
Spirit levels—Information on four types of spirit levels—telescope and plate levels, chambered and circular vials—is contained in a new bulletin just released. The bulletin, with data on unmounted as well as mounted levels, includes tables on sensitivity. Bulletin 7200, W. & L. E. Gurley, Troy, N. Y.

Axle units—A 4-page bulletin, No. 502, on RT-series tandem axle units has been released by Hendrickson Mfg. Co. These axle units are the standard for the 6-wheel truck industry, and are also used in trailer installations requiring articulation and equal load distribution. Hendrickson Mfg. Co., Lyons, Ill.

Rock drills—A new 12-page bulletin describing Le Roi-Cleveland Rock drills illustrates a line of construction tools, breakers, sinkers, clay spades, tampers and wagon drills. Pages are devoted to tool design and construction, operator handling and care and maintenance features that lead to longer tool life. The lubrication system, drill and blow actions, and valve and piston design receive special attention. Le Roi also has a 6-pg description of one-use drill bits in Bulletin RD 29. Le Roi Div., Westinghouse Air Brake Co., Milwaukee 1, Wis.

Colors in face brick—A 32-page brochure contains over 100 illustrations of buildings with exteriors of Ava face brick. In addition there are full-color illustrations of eight different brick shades plus authentic reproductions of ten others. Those shown range from charcoal and rose-biege in the radiant-matt texture to reds, ivory and buffs in the vertical, smooth and bark-type textures. The booklet also contains information on bonds, mortars, brick research, interiors, fireplaces, as well as how bricks are packaged and palletized. The Stone Creek Brick Co., Stone Creek, Ohio, and The Ava Brick Co., Ava, Ohio.

Money-saving way to REDUCE FACTORY NOISE LEVEL...



Typical Tectum Sidewall installation at Clark Equipment Co., Construction Machinery Div., Benton Harbor, Mich.

install TECTUM SIDEWALL INSULATION PANELS

THE EVER-INCREASING IMPORTANCE of sound control in industry makes Tectum, more than ever, the ideal material for factory sidewalls. In Tectum, the most desirable qualities of many materials are combined in one lightweight, easy-to-install sidewall plank.

Exceptionally high sound absorption characteristics frequently eliminate the need for additional, costly acoustical treatment. The felt back substantially reduces sound transmission as well.

But that's only part of the story . . . Tectum offers many other important advantages:

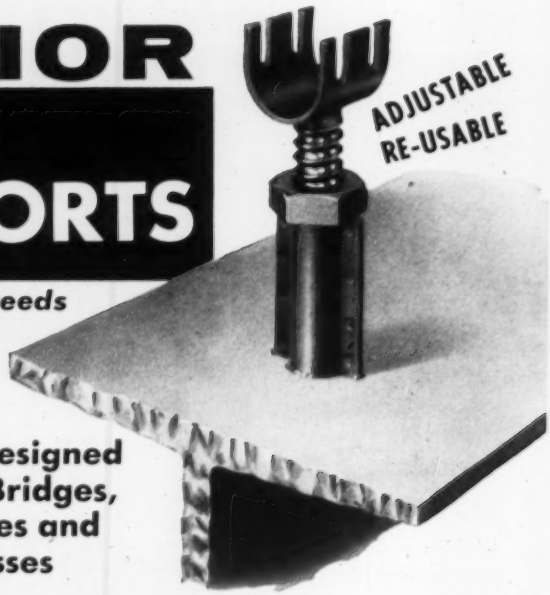
- *Superior insulating quality helps provide greater year 'round comfort . . . lowers heating and cooling costs.*
- *Rigidity and unusual structural strength makes possible the use of thinner, less expensive outer skin.*
- *Fire hazard is reduced . . . insurance rates are lower . . . because Tectum is rated noncombustible.*
- *Fast, simple erection holds labor costs to a minimum. When Tectum goes up, the job's done . . . its attractive off-white natural surface requires no paint, but can be painted without loss of acoustical value.*

Yes . . . Tectum not only offers many initial advantages, but continues to pay dividends in providing better working conditions with lower maintenance costs. Learn more about Tectum . . . write for Sidewall Insulation Panel Bulletin or see your nearby Tectum distributor. Tectum Division, Peoples Research and Manufacturing Company, 518 South Sixth Street, Newark, Ohio.

New SUPERIOR Heavy-Duty SCREED SUPPORTS

Pat. Applied For

For Use with 1¼" and 1½" I.D. Pipe Screeds and Vibratory Screeding Equipment



ADJUSTABLE SCREED HOLDER

Consists of a 1" threaded rod to which is welded a cradle to hold the pipe screed. This cradle is slotted as shown so that the arms may be bent over to secure the 1¼" or 1½" I.D. pipe screed. Threaded onto the rods is a half nut which provides the adjustment.

Especially Designed for Use on Bridges, Underpasses and Overpasses

These Screed Supports are designed to take the heavy loads imposed by traveling vibrating screeding equipment. The Bases for the screed holders are of two types: (1) The Metal Base for use on structural steel members; (2) the Chair-Type Base for use on a plywood deck.

On Structural Steel: As shown above, the Metal Base is tack-welded to the top flange on approximately four foot centers. The Screed Holder is set into the base, and adjusted to height by turning the nut. The threads are fast, three to the inch, and of a contour type, non-clogging and easily cleaned.

On Wood or Plywood Decks: The Chair Base is set on the deck at approximately four foot centers. It is easily secured to the deck by nailing across the upturned legs. If desired, legs can be supplied of galvanized wire. The Chair Base with holder is shown below.

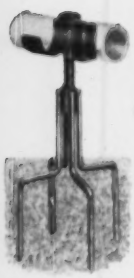
PERFORMANCE

Superior's Heavy-Duty Adjustable Screed Supports have been used on turnpike structures and other projects. Results in the field indicate that this method of supporting screeds provides a simple answer to an otherwise expensive and complicated set up. *Write for Bulletin.*

Adjustable Standard SUPERIOR SCREED CHAIRS

FOR FORMED SLABS 4½" AND GREATER

With re-usable screed holders using 1" I.D. pipe and rectangular bars for screeds.



FOR SLABS ON FILL

With re-usable screed holders using 1" I.D. pipe and rectangular bars for screeds.

HOLDER INSERTED IN CHAIR BASE

Only the inexpensive bases are left in the concrete. The Adjustable Holders are easily removed, together with the pipe screed, because the holders are set, not screwed into the base. The nut fully covers the base opening and prevents concrete from entering.

SUPERIOR CONCRETE ACCESSORIES, INC.

4110 Wrightwood Avenue, Chicago 39, Illinois

New York Office
1775 Broadway, New York 19, N. Y.

Pacific Coast Plant
2100 Williams St., San Leandro, Calif.

Hamilton Wright Photo

Some 400 pieces of equipment moved up to 170,000 cu yd a day at . . .

Guarico Dam: Another Bustling And Dramatic Venezuelan Job

By moving as much as 170,000 cu yd of earth a day, the builders of Venezuela's 9-mi-long, 100-ft-high Guarico Dam completed the structure in time to capture this year's flood flows that began last month. Summer rains have now just about filled a 1.5 million acre-ft reservoir which will provide irrigation water for a 270,000-acre area in the heart of Venezuela's semi-arid central plains, 190 miles south of Caracas. Size of the reservoir is slightly greater than a normal year's flow in the Guarico River, 90% of which is accounted for in the short rainy season.

It wasn't until late in 1955 that major contracts were let—involving placement of 15 million cu yd of gravel and clay in the embankment and 130,000 cu yd of concrete in a 435-ft spillway. Since the Venezuelans wanted to gain a year's time in getting the project in operation, and had the money to pay for a lavish construction effort, they specified substantial completion by this August, which allowed the contractors only six months of high-gear operation.

NINE-MILE-LONG earthfill dam, 100 ft high, had to be closed in six months. Rock to face upstream side was hauled 41 miles.

And it was really high-gear construction. Government forces, a local contractor teamed with S. J. Groves of Minneapolis and no less than 400 pieces of heavy equipment combined to meet the challenge on the earthfill structure. Counting the equipment used by seven other contractors, there were 900 pieces of machinery on the job at one time early this year.

• **Traffic jams**—Not surprising, one of the biggest problems was to keep traffic moving on 22 miles of haul road on a round-the-clock basis. At night, portable electric semaphores were used at crossings and colored lights distinguished each type of vehicle. A carefully devised set of traffic rules kept dump trucks moving to the dam face at the rate of one every 45 seconds.

Guarico construction also featured probably the world's longest haul dis-

BUILD
BRIGHT COLORS
RIGHT INTO
CONCRETE
FLOORS...

And get greater hardness at low cost . . . easily!

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ART-ROC
AGGREGATE

Ready to use . . .
No pre-mixing with cement

Not a paint . . . ART-ROC troweled into the cement surface holds attractive colors safe from attack by cleansers, alkalis or rust. Provides a tough extra-hard surface at no extra cost . . . both for interior and exterior installations. Floors or pavements with ART-ROC are bright and attractive . . . easy to clean, economical to keep up.

Colors . . . Hardens . . . Beautifies . . . Dustproofs!

Just sprinkle on the leveled and floated fresh concrete surface, then work into the surface with a wood float and finish with a steel trowel. You'll be amazed at the brilliance and depth of the two beautiful colors: Tile Red and Spanish Green.

Remember . . . ART-ROC is not just a surface film, but color that's built-in to stay . . and it's so easy to use!

- Terraces
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tance—41 miles—over which 650,000 cu yd of rock for the upstream face of the earthfill had to be transported. Fortunately, the haul road is to become a main highway, leading to the town of Calabozo.

Guarico Dam is Latin America's largest in volume and length. Base width at the 100-ft-high portions is 655 ft. Irrigation water feeds into twin intake towers each connected to a 14-ft-dia steel-lined conduit that discharges into an 800-ft-long stilling basin on the downstream side of the dam. The basin will discharge 3,500 cfs into a 29-mi main irrigation canal, thence into 290 miles of feeder canal.

About 20% of the 270,000 acres to be irrigated will be devoted to farming, the remainder to cattle raising. The Ministry of Agriculture plans to resettle about 600 hand-picked families in the irrigated region.

• **Project costs**—The entire project, including the irrigation system, and agricultural aspects is expected to cost $75 million when complete eight years from now. Contracts for the dam itself totaled $19 million, but do not include preliminary work and one-third of the earthmoving which was performed by the construction agency, the Ministry of Public Works. Design of the project was handled by this Ministry, with R. J. Tipton Associated Engineers, Denver, Colo., serving as consultant.

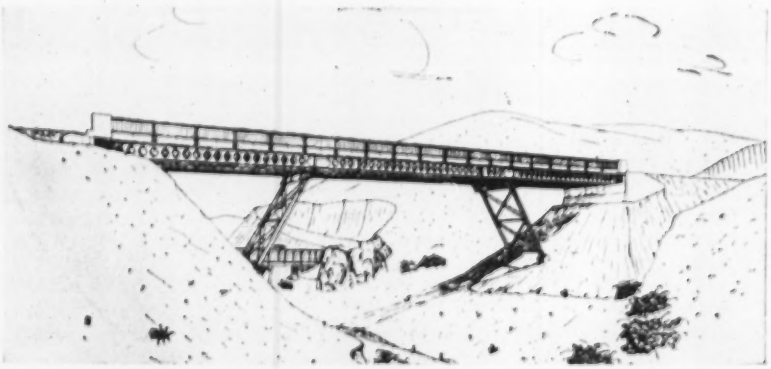
Principal contractors are Brillenbourg Villegas Asociados CA for the earthfill; Construcciones Industriales SA on the spillway excavation; Tecnica Constructora CA on spillway construction; and Ingenieros Scannone & Garcia Galindo SA for the intakes.

Guatemala President Speaks At Regional Road Conference

Principal speaker at a meeting of the International Road Federation at Guatemala City Nov. 26 will be President Castillo Armas, IRF has announced.

The conference, a regional meeting, is designed to bring together leaders of national roads associations, public works and highway administrators and highway engineers of Mexico, the Central American republics, the Caribbean area and Colombia.

Principal purpose is to focus new attention on the Pan American Highway.



New Zeal Marks New Zealand Bridges

With 38,000 lin ft of bridges presently on the Department of Works drawing boards, bridge building in New Zealand has become a rapidly expanding field. Emerging from the department are some interesting and unusual designs.

For instance, to avoid high piers for new three-span Mangaturanga Stream bridge (picture), engineers designed sloping supports that carry the structure at its third points. Founded in rock, the raking piers eliminate placing the supports in the stream bed. Novel steel girders with large hexagonal openings cut in their web serve as continuous stringers for the structure. Resting on the stringers is a concrete deck. The bridge is located on the Gisborne-Napier State Highway.

Another new crossing is the Patea River bridge, a seven-span continuous-girder structure 444 ft long. It is in reinforced concrete on a skew of 28 deg. Piers are carried on 50-ft piles.

Five welded-steel box girders, 3 ft 6 in. deep, comprise the main supporting members of the single-span George Street overpass at Dunedin—another of the new designs.

The Department of Works expects that the boom in bridges will continue over the next few years. To accelerate the program, the department is stockpiling standard bridge superstructures made to their own specifications.

Put BIG 25-yd. "B" on BIG yardage jobs

If you want a dirtmoving machine that will haul bigger payloads, at higher average speeds, for lowest-net-cost-per-yard . . . check these Big B Tournapull advantages:

Greater capacity

18 cubic yards, struck, or 25 cubic yards, heaped, make the new "B" an outstanding machine for those big jobs. Designed especially for 25-yard capacity, it has speed, power, and stamina to out-produce any other rig on the market.

10-gear speed selection

Choice of 10 gears, plus clutch brake for fast shifting, means hauling at higher speeds . . . more trips per hour. Double-clutching and gear clash are eliminated. Low-gear speed range matches pushers, aids in loading. Wide range fits tough going, gives better grade-climbing ability.

Faster, easier loading

Stout, double-steel bottom, reinforced by welded-steel filler channels, takes strain and shock off fast loading with pushing tractors. Wide, shallow bowl allows easy entrance of dirt. New push-block provides direct line thrust to cutting edge. New scraper hoist-control gives fast pumping action in loose materials. New blade angle, improved weight distribution, and easy loading characteristics of the big B Tournapull speed up loading.

Power where it's needed

Tournapull's electrical control system puts the power right where it's needed, with minimum friction loss. Dependable motors are unaffected by weather conditions. Operation is by dashboard push-buttons . . . action is instantaneous. Maintenance is simple.

Shorter turns

Despite its size, "B" maneuvers in closer quarters than any other big, self-propelled scraper. This machine can turn around in a space only 35' wide. Machine is power steered . . . easy to handle anywhere . . . maneuvers safely in rough going, at high speed.

Less weather delay

Start work earlier . . . stop less often due to rain . . . add work-time at end of season with "B's" high tractive ability. Power-transfer differential transfers pull to wheel on firmest footing . . . "walks" "B" out of soft spots. Big, low-pressure tires give good traction in soft going. Rain and dust do not bother electrical system.

Faster, easier servicing

Accessibility is tops in the "B". New design makes every component easy to get at and service in the field. Fewer fittings and check points reduce lubrication time. Compare "B" with other big scraper units . . . note simplicity, accessibility, check service manuals and count and compare individual operating needs per month of operation.

Profit-making interchangeability

A 35-ton Rear Dump is available for use with the same "B" prime-mover. You can switch this 35-ton hauling unit anytime job conditions call for shovel or dragline loading. This way you get insurance of continuous earnings . . . double value from your investment.

Tournapull—Trademark Reg. U.S. Pat. Off. BP-955-G-b

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

ARBA

See you at the ROAD SHOW • Chicago • January 28-February 2, 1957

SWAMPLAND SECTOR which will one day be a park presents fill, subsoil problems for builders of a NYC express route.

Mud Boils, Accordioned Piles Slow Road Job

24 FT OF PILE are in that four-foot accordioned section of hollow steel covered by the ruler above. Unexpected density of fill over swamp was cause.

MUD BOILS resulting from shear failure of surrounding land knocked piles out of line, filled excavation which was to have housed a storm-water culvert.

Building a new road over a swamp that will one day become a New York City park (ENR Nov. 3, 1955, p. 45) continues to pose peculiar problems for engineers and contractors.

Part of the now-building Long Island Thruway, the section involved includes bridging an area shown for many years on city maps as "Alley Pond Park" which is actually an almost sea-level depression amid the low rolling glacial-moraine hills that form much of the North Shore of Long Island. Once current road connections are finished, much of the swamp area will be dredged to form a scenic lake, and other areas will be filled to make the word "park" a reality.

One of the problems has to do with the fill itself—a fill that got so thoroughly compacted that hollow steel piles couldn't be pushed through it (engineers figured 100% compaction was achieved) until part of the fill was removed and steel angles welded to the sides of the piles; the other was a classic shear failure that held up construction of twin 6 ft by 6 ft culverts through the swamp itself.

• **Tough fill**—The fill itself—constructed by a mud-wave method—proved tougher than the most optimistic engineering estimate.

The problem originally was to get rid of thousands of yards of organic silt that formed the bottom of the swamp, without sheeting and excavating to good bottom. Solution, worked out by Brown & Blauvelt, con-

Grade roads

Build airports

Handle almost any job with "do-it-all D"

Dig drainage ditches

Backfill around buildings

Handle clean-up

Production dirtmoving

We haven't listed *all* the things D Tournapull can do. Frequently it does the work of several pieces of high-priced, specialized equipment. But, chances are you could find applications for the "D" we have never thought about.

That's one of the big advantages of this machine. It's highly versatile, changing at a moment's notice from one kind of work to another . . . running from one location to the next at speeds to 29.5 mph . . . speeding both big jobs and small.

"D" can work in tight quarters and around obstructions that seriously interfere with other types of equipment. Its capacity is larger than that of an average dump truck, yet it will load itself, spread with its dozer blade to eliminate need for tractor, and travel places where a truck cannot go. And, with its open top, it can be used as a hauling unit for loading by belt, elevator, shovel, hoe, dragline, or clamshell.

Not only will D Tournapull handle these and a great variety of other jobs, but it will handle them easier, faster and with less manpower and auxiliary equipment than any other dirtmoving rig.

Tournapull—Trademark Reg. U.S. Pat. Off. DP-811-G-b

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WELDED or RIVETED
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- Boiler Breechings
- Flues and Ducts
- Condenser Shells
- Condenser Piping
- Heavy Turbine Housings
- Fan and Blower Housings
- Dust Collector Housings
- Industrial Gas Mains
- Expansion Joints
- Hoppers and Bunkers
- Tanks and Vats
- Pressure Vessels
- Wind Tunnels
- Crane Bridge Girders
- Trolley Frames and Trucks
- Rigid Frames
- Roll-Over Fixtures
- Tank Turrets
- Gun Mounts
- Heavy Truck Bodies
- Engine Frames and Bases
- Crawler Frames
- Press Platens and Beds
- Press Columns
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- Gas Seal Hoods for Blast Furnaces
- Furnace Roof Rings
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MACHINING
- Complete Machining Service—Facilities for Heavy Work of Unusual Dimensions

STRUCTURAL STEEL
- For Buildings, Bridges and Special Purpose Structures

Drum Gates
Roller Gates
Taintor Gates
Taintor Valves
Protection Angles

THE R. C. MAHON COMPANY
DETROIT 34, MICHIGAN
Branch Offices in New York and Chicago
MAHON

sulting engineers for the state of New York on the section, was to advance the more than 700,000 cu yd fill in a sharp knife-edge, squeezing the mud before it into waves that could be removed by dragline and clamshell.

The method worked well, aided by the movement of scrapers and trucks, and compaction by rubber-tired rollers. But when J. C. Moore, job superintendent for Tully & DiNapoli, contractors on the section, started to drive piles for a bridge abutment into the fill—he ran into the trouble shown in the accompanying photograph.

Final answer was removal of about 30 ft of the depth of the fill, then welding of three angle-irons onto the outside of the piles, to give them stiffness during driving. Even so, two of the pipe-piles called for in the design had to be eliminated, and steel beams driven instead.

• **Shear failure**—Meanwhile, Slattery Contracting Co., with a contract to pave the roadway in the area and do other work—including the twin culvert—ran into trouble. The culvert is to carry storm water into the proposed lake.

Following normal procedures, Slattery drove wood sheeting around the perimeter of the culvert area, and in it sank a number of wood piles to bearing at about 40 ft. The piles were to be cut off below ground level to form foundation for the culvert.

With the piles driven, Slattery started to excavate the gooey muck inside his wood sheeting—and the classic failure occurred. What happened was that clay-silt areas to the south of the excavation failed along a curved line, and the mass of material revolved under the 20-ft-deep sheeting, bubbling up inside the excavation.

After a delay in obtaining material—final solution was to drive steel sheeting to firm bearing, drive some new piles (to account for those knocked out of line by the failure) and finish the job.

By probing its depths . . .

Camera Extends Well Life

A camera that can explore the depths of costly irrigation wells and probe the gas-filled, malodorous reaches of sewer lines figures to save countless dollars in preventive maintenance and pinpointing actual damage.

The camera, invented by Claude Laval, Jr., of Fresno, Calif., now is the property of the Laval Underground Surveys, Inc., of Fresno, a wholly owned subsidiary of the Food Machinery & Chemical Corp. It was described in its well exploration use some years ago (AWWA Journal, May, 1951, p. 378), but the sewer inspection application is new.

To date the camera has been used mostly on the deep water wells of the San Joaquin Valley's west side where irrigation is dependent on well water. Charles H. Sortor, manager of the Laval survey firm, said the wells run from 1,200 to 3,200 ft in depth with most averaging from 1,500 to 1,800 ft. The cost of installing them is from $10 to $15 a foot. "This camera can quadruple the life of a well," Sorter declared. "Instead of abandoning a well which has become inoperative, the camera can locate the damage and repairs can be made."

The well camera is 6 in. in dia and 8 ft long. As it is lowered into the casing, photos are taken at 5-ft intervals. The negatives are numbered and keyed so that by looking at the negatives the precise depth at which a particular picture was taken can be determined.

After viewing the negatives (they give better detail than a print) through a three-dimensional viewer, trouble spots can be pinpointed and new pictures taken as close as 3 in. apart to investigate damage in detail.

As to its newer application, Donald E. Baird, Fresno city engineer, sees a great future for the camera in a field in which every city is interested—sewer maintenance. "Fresno has used it twice, once in a 54-in. main outfall sewer which for years the city had heard was caving in from the pressure of the 26-ft of earth under which it is buried," Baird said. "The pictures, however, showed the line to be in such satisfactory condition we estimate it has 35 to 50 more years of useful life."

To examine the line in the old way would have required considerable excavation work to uncover it. For a man to walk through the sewer, a possibility in the early morning when flow is lowest, would have required an oxygen supply and a variety of safety devices to avoid the dangers of explosive sewer gas.

Besides wells and sewers, Sortor

Plan your tractor work around the FOUR DIMENSIONS of tractor earthmoving

To get your share of future business, and profits, you need *power* . . . not only to "bull" out the heavy loads, but to move the largest loads possible, at the highest possible speeds.

You need *traction* . . . to take advantage of the available power. Traction to work on steep grades . . . traction to hang-on in slippery footing and loose materials to keep heavy loads moving.

You need *speed* . . . to keep pace with today's demand for faster job-completion . . . speed to move more dirt on longer hauls . . . speed for quick returns.

And, for today's larger and larger jobs, you need *mobility* . . . to handle scattered assignments in less time . . . to meet emergencies of job or weather . . . to step-up production on sections behind schedule . . . to move fast job-to-job, without need for special hauling equipment and extra men.

In order to fully capitalize on tomorrow's opportunities, your tractor fleet of today must qualify in all FOUR of today's tractor dimensions . . . power . . . traction . . . speed . . . and mobility. Your present heavy-duty track-type tractors have adequate power and traction. But most lack speed in their working ranges . . . none meet your important needs in the fourth dimension — mobility.

Tournatractor leads the comparative crawlers in power, and matches crawler pull in higher gears (over 2 mph), but has less traction for pull in lowest gear (under 2 mph). It matches crawler speed and traction in the work range, saves time and momentum with instant gear changes, has twice the travel speed, along with full mobility to move cross-country or via highway to the next work assignment. To make maximum profits in the expanding opportunities ahead, you NEED both the low-speed traction advantage of the crawler and the high-speed mobility of today's improved Tournatractor!

May we arrange a demonstration for you? Call or write today . . . no obligation.

▼ Figure percentage of your cycles where low-speed pull advantage is important. Then figure percentage where speed and mobility make money. On many of your operations you'll find, even in heavy digging, that a lighter loading cut combined with high-speed haul, return, and moving between assignments, pays off in production and profit. Time-study your tractors and see for yourself, but be sure to measure loading your blade or bowl in TIME, not distance!

Study these tables showing relationship of pull to speed:

	SPEEDS	
Machine*	**Forward**	**Reverse**
Tournatractor	17.4 mph	7.3 mph
Cat D8	7.4 mph	7.4 mph
IH TD24	7.6 mph	6.6 mph
AC HD21	7.5 mph	5.5 mph

	POUNDS-PULL			
Machine*	1.5 mph	2.0 mph	2.5 mph	3.0 mph
Tournatractor	24,700	23,500	18,800	15,650
Cat D8	30,000	24,000	18,000	15,000
IH TD24	32,500	22,500	18,000	15,000
AC HD21	Pounds-pull curve not shown in manufacturer's literature available to us.			

Note: Figures taken from manufacturers' specification sheets available to us at time of printing.
*All machines torque converter equipped.

Tournatractor — Trademark Reg. U.S. Pat. Off. CT-1149-G-b

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

ARBA

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First Name in Whiteprinting

DEPENDABLE, NATIONWIDE SERVICE

keeps your Ozalid whiteprinter on the job years longer

You're assured *many more years* of continuous, trouble-free printmaking in *two important ways*—when you buy an Ozalid whiteprinter.

First: the model you choose is the finest performer in its class—rugged in design, reliable in operation.

Second: *when* and *if* maintenance is needed, Ozalid is nearby—ready, willing and *able* to get things going again, on the double.

More than 250 factory-trained service experts across the country keep your Ozalid machine in top trim. Their "preventive maintenance" program—including inspection, cleaning, lubrication—avoids service calls and jam-ups for you.

Ask your nearest Ozalid distributor about maintenance—and about the latest model Ozalid whiteprint machines. See his number in the phone book or write to:

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Department N-9, Johnson City, N.Y.

A Division of General Aniline & Film Corporation
In Canada: Hughes Owens Company, Ltd., Montreal

LOOK FOR IT!

NEW "STREAMLINER 400"

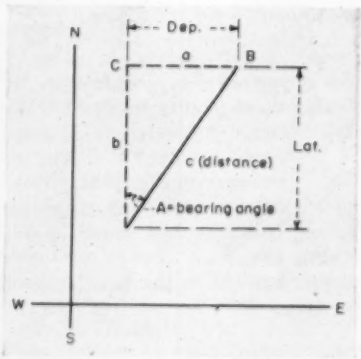
says the camera can be used in mine shafts and blast holes, in the latter case to locate the most advantageous spot to place a charge. (In this regard, it is not to be confused with the bore-hole camera, which was used to take 360-deg pictures in 3-in. holes drilled in the rock at Folsom Dam (ENR June 25, 1953, p. 39).

Plexiglas Glazing on Rigs Halts Window Breakage

A number of contractors building a distribution depot for the Pennsylvania State Liquor Commission at Kingston, Pa. have eliminated an expensive window breakage problem in their heavy earthmoving and construction equipment by substituting panes of Plexiglas plastic for conventional safety glass.

According to the Plastics Arts Co. of Wilkes Barre, Pa., rough service, stones, carelessly handled tools and door slamming were taking a heavy toll of glass windows, windshields and enclosures on drag lines, shovels, dozers and scrapers. In some cases, windows were replaced as often as once a week.

As a remedy, original glazing was replaced as it was broken with ¼-in. thick panes of Plexiglas, the largest panel installed to date being 32 x 61 in. According to the manufacturer, replacement program started in the fall of 1955 and as of this date not a single case of breakage has been reported. ROHM & HAAS CO., PHILADELPHIA, PA.



Quick Check for Coordinates

Here is a useful formula, which can be called the "45-deg check". It enables the computer to check coordinates quickly.

$$c \times \cos (A - 45) = \frac{1}{\sqrt{2}} (b + a)$$

E. D. JONES, NEW ENGLAND SURVEY SERVICE, INC., WEST HARTFORD, CONN.

Loads truck every 45 seconds... 700 yards per hour

Fast, clean handling of dirt makes every yard cost less. With a fast-loading Elegrader mounted on your larger size Adams grader, you can cut earthmoving costs on jobs where large volume loading, casting, or ditching is required.

Makes your grader a loader

Elegrader cuts ditches and casts plowed material up on the road-bed, into trucks, or over the side bank. It loads fill, strips topsoil, works effectively in clay, loam, sand, gravel, or muck. A heavy-gauge disc-plow is mounted on sturdy plow-beam attached at front of grader. Plow is raised or lowered by power controls from operator's cab . . . digs to 30" depth.

Loads or casts

Excavated material flows from disc-plow onto a trough-belt conveyor . . . travels up and off conveyor at speed of 450′ per minute. You can load up to 700 cubic yards per hour, depending on soil-conditions. 5-yard trucks can be loaded in 30 seconds with a 45-second loading-cycle. When loading a fleet of trucks, the conveyor height is adjusted to load the highest truck, and need not be changed for others.

For jobs such as building up a road grade, or wasting dirt to the side, Elegrader overcasts up to 1500 cu. yards per hour.

26 mph mobility

Your Elegrader, mounted on an Adams grader moves job-to-job at speeds to 26 mph. Conveyors 16′, 19′ or 22′ long are power folded and carried on grader when traveling . . . 27′ conveyor is towed behind grader on its own rubber-tired wheels.

Make cheap dirt pay

Get the facts on Elegrader for fast, clean, big-volume dirt-handling. Find out how a small investment can pay you big dividends. For complete information, just telephone us or drop us a line.

Check these Elegrader features

Troughing belt — 30% more carrying capacity than flat belt; makes steep-angle operation practical.

Hinged conveyor — power-operated folding conveyor; travels safely at traffic speed from job-to-job.

Extended lip and rock-guard — deflects foreign objects from striking belt and conveyor, prevents disc from cutting belt.

Extra-heavy plow-beam — sturdy, stable mount for disc-plow; balances carrier for smooth, easy operation.

Sealed bearings on conveyor-rollers — make lubrication unnecessary for life of bearings.

Belt guide-rollers — center conveyor-belt, reduce wear, cut power-loss, reduce belt-maintenance.

Practical sizes — Available for use on Adams grader models 660, 610, 550, and Cat model 12. Carrier length: 16′, 19′, 22′, 27′. Belt width: 42″.

This Elegrader, mounted on Adams 660, cast 1000 yards an hour, rebuilt average of 1 mile of road per 14 hours.

Stripping 18" deep at 2¼ mph, this Elegrader loaded trucks in 30 seconds, averaged 600 yards per hour.

AE-37-H-b

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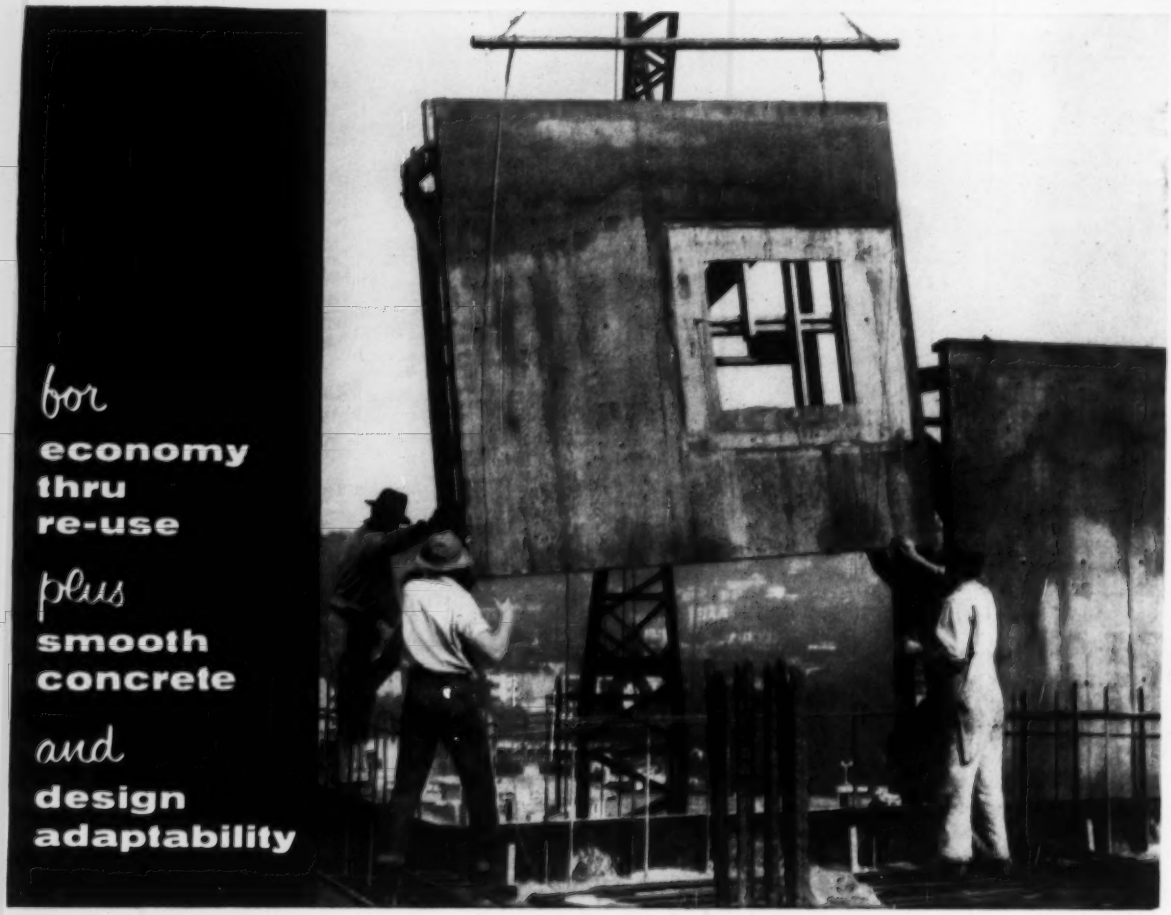

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***OVERLAID FIR PLYWOOD** — special panel with hard, glossy fused resin-fiber surfaces. Waterproof glue. Gives up to 200 re-uses.

Measure of Damages In Contract Refusal

When a successful bidder refuses to go ahead with a contract, the extent of his liability may depend upon the conditions under which the bid was submitted.

The following is a case in point:

The government advertised for bids on surplus material. The invitation for bids required each bidder to deposit a specified amount with the government agency, one of the conditions being that a withddrawal of a bid would forfeit the deposit. In addition, the government stipulated that, if the person to whom the contract was awarded refused to go ahead with the purchase, it could:

1. Terminate the contract.
2. Sell the material to another party.
3. Charge the party who refused to enter into the contract of purchase with any damages the government might sustain.

When the case went to court, after the successful bidder refused to buy the material, the court ruled that the government could not only retain the security deposit but could also recover the full loss it sustained by selling the material to someone else at a lower price.[1]

[1] United States v. P. J. O'Donnell & Sons, 228 F. 2d 162, U. S. Court of Apeals, Dec. 13, 1955.

No Claims Can Be Filed After Giving a Release

A subcontractor who gives a general release to the prime contractor can't later turn around and sue for more money.

In one case, for example, a sub had done the clearing and grubbing on a state thruway. After the work was done, the prime contractor paid the contract price and the sub gave him a general release.

Later, the sub sued for additional compensation. He claimed that during the progress of the work he had asked the prime contractor for more money because the job would bankrupt him without it. The prime contractor, he said, had agreed to pay him as extra compensation whatever he lost on the job, if the sub would go ahead and complete it.

The sub's claim for additional compensation was dismissed by the court[1] for the following reasons:

1. There was no consideration to support the promise to pay the subcontractor more than the amount called for by the contract.

2. The subcontractor had no claim against the prime contractor because he had already released him "from any and all obligations to me on account of clearing and grubbing operations performed by me."

[1] Huber v. Mt. Vernon Contracting Corp., 146 N. Y. S. 2d 879, N. Y. Supreme Court, Appellate Division, Dec. 23, 1955.

Determination of Engineer Final in Absence of Fraud

If a contract makes required determinations of the engineer final and conclusive, the contractor is bound by the actions of the engineer, unless he can show fraud in its broadest sense.

Here is a situation where a contractor was blocked by the engineer in getting his payments:

Under a construction contract the engineer was required to make all necessary explanations as to the meaning and intent of the specifications and drawings, to give all orders and directions contemplated by the contract, and to determine the amount, quality, acceptability and fitness of the work and materials to be paid for under the contract. The contract also provided that the engineer would determine all questions in relation to the work and would decide every question which might arise relative to the fulfillment of the contract on the part of the contractor. The engineer's decision and estimate was made a condition precedent to the right of the contractor to receive any money for work done under the contract.

The contractor brought an action to recover a sum that he claimed was due him for work done under the contract, claiming that the engineer had fraudulently refused to include payment for such work in his estimate and certificate of payment. The contractor obtained a judgment at the trial but this was reversed on appeal,[1] the appellate court holding that the evidence produced at the trial did not show any fraud on the part of the engineer in refusing to certify payment for the work in question and directed a new trial.

The appellate court pointed out that it has become common practice to include such provisions in construction contracts and stated: "Fraud in this connection has a broader connotation than is ordinarily implied. In addition to its ordinary significance,

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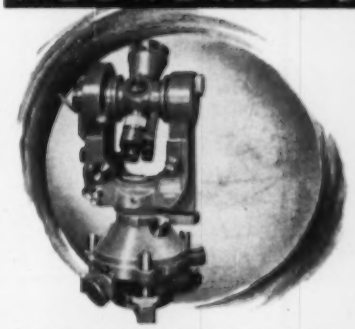

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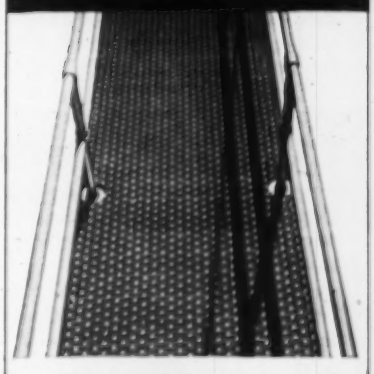

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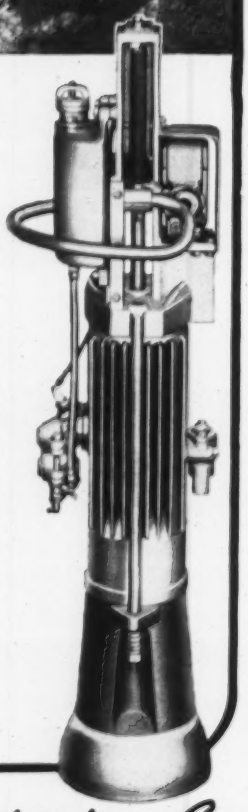

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. . . Legal

in construction contracts it includes arbitrary and gross mistake, 9 Am. Jur., Building and Construction Contracts, Section 34, Restatement of Law, Contracts, Section 303. Where such ground is not established, failure to obtain the engineer's certificate or a favorable decision from him precludes a recovery. However, when fraud is proved, the legal significance thereof is that the necessity for favorable action of the engineer is eliminated as a condition precedent to the maintenance of the suit, but the contractor still has the burden of demonstrating the breach of the contract and his right of recovery."

The court also pointed out that under such a contract provision, the engineer should act judicially and not in an arbitrary manner.

(1) Terminal Const. Corp. v. Bergen County Hackensack River Sanitary Sewer District Authority, 112 A. 2d 762.

Several Rules of Law On Contract Interpretation

In the construction of a written contract, words that are plain and free from ambiguity must be construed in their usual and ordinary sense. The law will not imply a contract as to a matter that is covered by the existing written contract.[1]

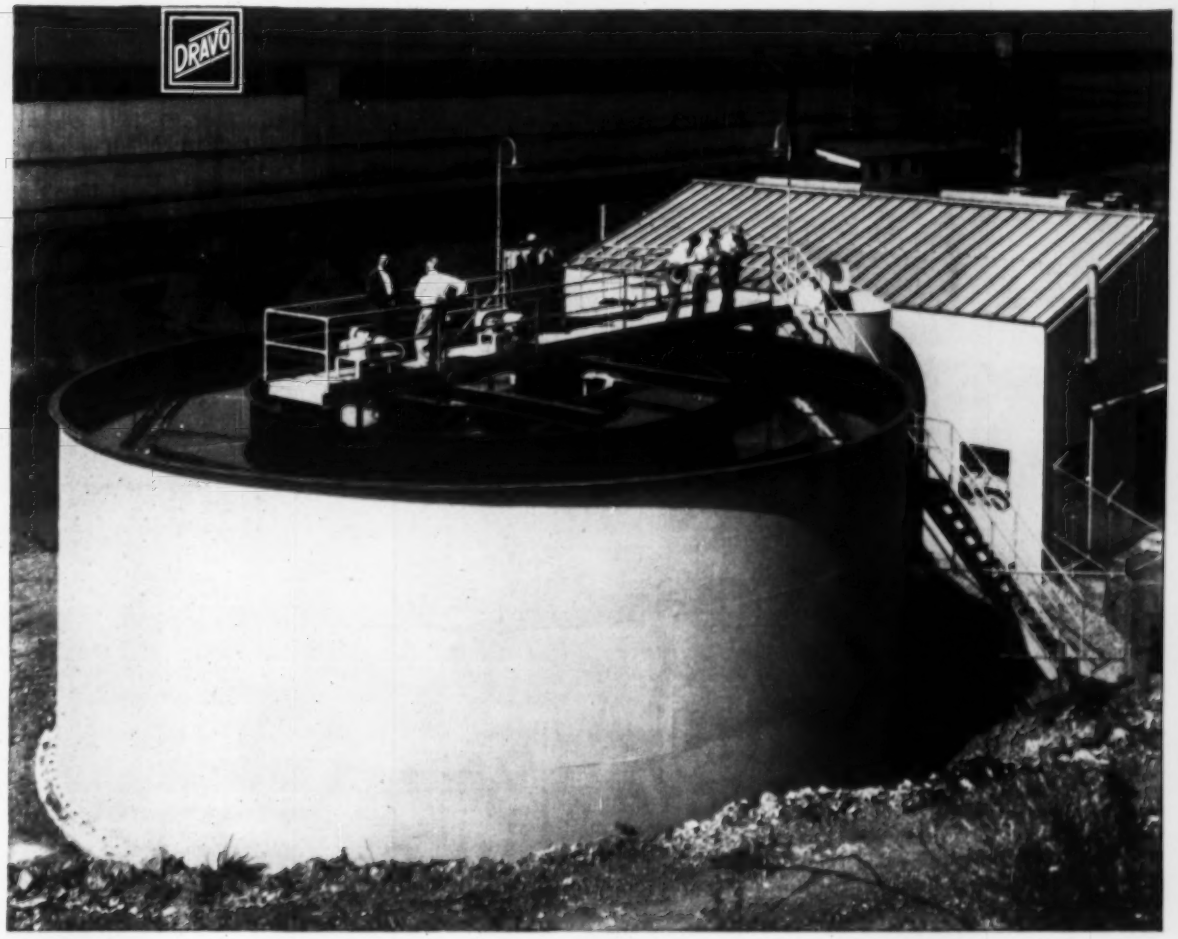
In construing a contract, a court should place itself in the position of the parties at the time the contract was entered into and should consider all the facts and circumstances existing at that time in order to determine the meaning of the words and phrases used in the contract.[2]

Where the language of a contract is ambiguous, the construction given it by the parties by their conduct at the time the dispute arose will be adopted by the court if litigaion arises concerning it if such construction is not unreasonable.[3]

Courts, in construing contracts, will not make a better or different contract than the parties themselves have seen fit to enter into nor will it permit evidence of an oral understanding or conversation had prior to the execution of the written agreement, because all such oral agreements have been superseded by and have been merged in when the written agreement was drawn up.

[1] Zarnm v. Brass Mill Materials Corp., 134 N. E. 2d 141.
[2] West v. Ankney, 134 N. E. 2d 185.
[3] Totsch v. Johnson, 134 N. E. 2d 352.
[4] Jones v. Crawford, 148 N. Y. S. 2d 335.

(These summaries of court decisions are prepared by I. Vernon Werbin, New York attorney and civil engineer.)



Ironing out a steel company's raw water problem

Universal Cyclops Steel Company at Bridgeville, Pa., was using a million gallons of raw water per day. Iron compounds clogged the piping and caused high replacement expense. Besides, more water capacity was urgently needed. After a survey, Dravo was selected to erect new water treatment facilities.

The new plant has twice the capacity of the old. Mineral content of water is controlled effectively, eliminating frequent piping replacement. The project includes building and foundations, chemical feeders, clear water reservoir, De Laval pumps and a 1500-gallon per minute Walker Process clarification unit.

This is typical of the varied construction assignments performed by Dravo . . . many on a single contract or "turn-key" basis. For information on such problems or the other Dravo products and services listed below, write DRAVO CORPORATION, PITTSBURGH 25, PENNSYLVANIA.

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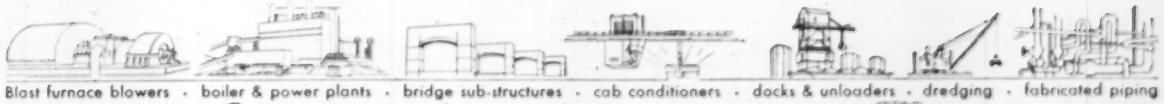

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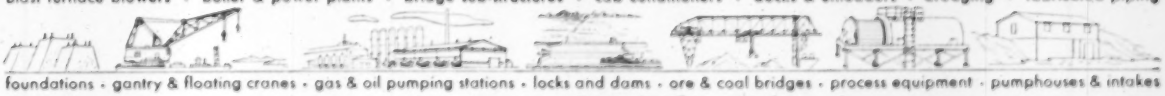
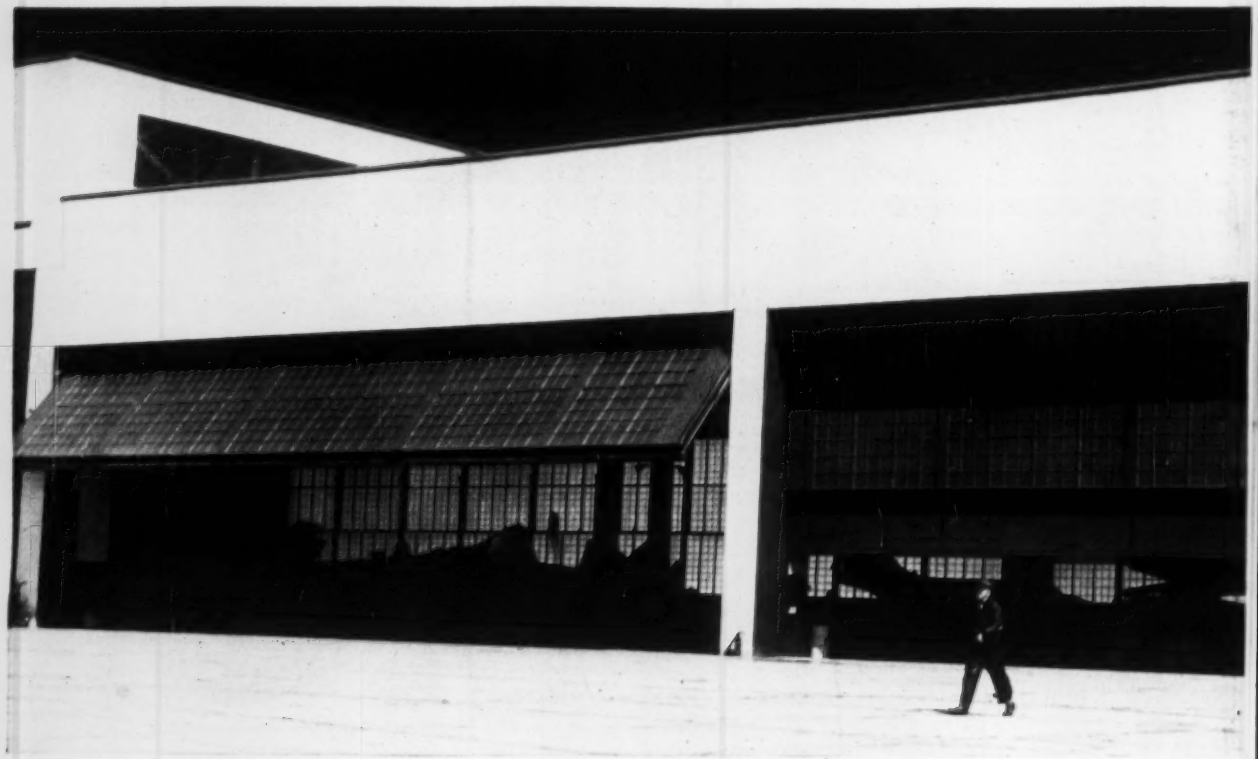


foundations · gantry & floating cranes · gas & oil pumping stations · locks and dams · ore & coal bridges · process equipment · pumphouses & intakes

river sand and gravel · sintering plants · slopes, shafts, tunnels · space heaters · steel grating · towboats, barges, river transportation



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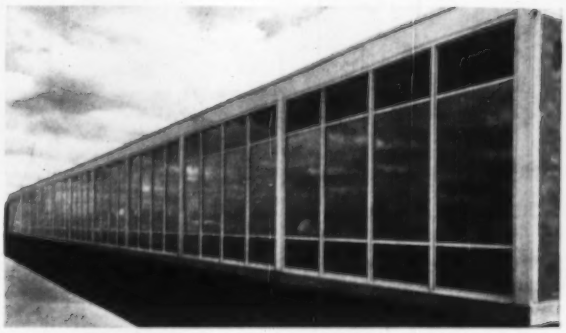

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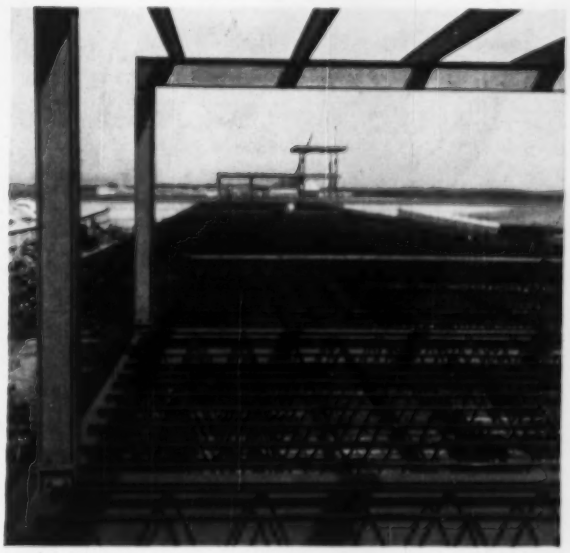

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Men and Jobs

Col. W. W. Lapsley to Head Engineer Maintenance Center

Col. William W. Lapsley, chief of the Supply and Maintenance Division, Headquarters Army Forces Far East, will assume command of the Engineer Maintenance Center, Columbus, Ohio, Oct. 15. The change, announced by Maj. Gen. Charles G. Holle, Acting Chief of Engineers, will fill a vacancy left when Brig. Gen. Miles M. Dawson retired last spring.

Colonel Lapsley was commissioned in the Corps of Engineers in 1935 upon his graduation from the U. S. Military Academy at West Point. He received an MS degree in civil engineering from the University of California in 1937, and later studied at the Armed Forces Staff College, Norfolk, and the Engineer School, Ft. Belvoir, Va. From engineering work with the Corps in this country, he went overseas during the war years and served as commanding officer of the 41st Engineer Regiment in the Mediterranean and European Theaters of Operation. Prior to his present post, Colonel Lapsley was chief of the Supply Division, Engineer Section, in the Far East.

Designer of First Ski Lift Retires From U. S. Steel

Gordon H. Bannerman, designer of the first ski-chair lift and authority on the design and erection of aerial tramways, retires this month from U. S. Steel Corp. Residing in San Mateo, Calif., he has been manager of tramway sales for U. S. Steel's Columbia-Geneva division.

G. H. Bannerman

Bannerman started his career with the company in a drafting room of the American Steel & Wire Co. at Trenton, N. J. His original ski project was for the Union Pacific Railroad at Sun Valley, Idaho, 20 years ago. Since that time he has worked on more than 200 tramway projects, designing and supervising their construction in U. S. and Canada.

Gregg Leaves Louisville City Construction Agency

George R. Gregg has retired as general superintendent for construction and maintenance for the Metropolitan Sewer District of Louisville, Ky. He had been in the post for 21 years and in construction for some 50 years.

The Beargrass Creek interceptor sewer in Louisville is among the recent projects he has directed. He is also known for his part in construction of the 351-ft concrete monument to Jefferson Davis in Fairview, Ky., over the years 1917 to 1924.

Men and Job Briefs . . .

• **Associations**—The Portland Cement Association appoints **William J. Moore** as district field engineer at the newly opened office in Baltimore, Md.

• **Corps of Engineers**—Lt. Col. **Joseph F. Garbacz** is named executive officer at the Corps' Portland, Oregon, District. He replaces the post left vacant by Lt. Col. **Francis B. McBride** who was assigned as assistant district engineer at Portland.

• **Careers**—The Wyoming State Public Health Dept. hires **David P. Green**, former Brownsville, Tex., consulting engineer for the division of environmental sanitation. . . . The Idaho State Highway Department names **G. Bryce Bennett** as state highway engineer, replacing **E. V. Miller** who resigned.

• **Business**—The Dravo Corporation of Pittsburgh, Pa. appoints **William C. Stratton** as chief engineer of the engineering and construction division . . . **Louis S. Forman** opens his own consulting engineering office in Lancaster, Pa., following his retirement as chief of the structural department in the architectural-engineering firm of J. Gordon Turnbull, Cleveland, Ohio.

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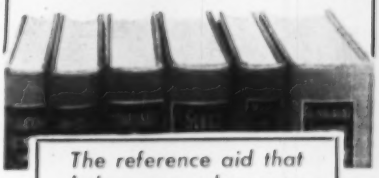

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Books

Engineering Encyclopedia

Publication—in about three years—of of the first comprehensive, multivolume encyclopedia devoted exclusively to science and technology has been announced by the McGraw-Hill Book Co. To be known as the "McGraw-Hill Encyclopedia of Science and Technology," it will total some 7,000 oversize pages, and will probably be bound in ten volumes.

The encyclopedia will be made up of several thousand articles written by acknowledged authorities on the various subjects. It is designed to serve as a complete reference work for the student, teacher, engineer, scientist and others seeking information on scientific and engineering matters. Readability and comprehension will be at the college upper-classman level.

Initial publication of the encyclopedia will be followed by annual yearbooks and, periodically, by complete revisions of the books themselves to keep the encyclopedia owners abreast of new developments as they occur.

McGraw-Hill has established an editorial office at Charlotesville, Va., to house the staff preparing the encyclopedia and to provide convenient research facilities at the near-by campus of the University of Virginia.

Basic to Engineering

ENGINEERING MECHANICS—By S. Timoshenko and D. H. Young. Fourth Edition. 534 pp., McGraw-Hill Book Co., Inc., New York, N. Y. $7.50

Like earlier editions, this book remains designed primarily for undergraduate courses in engineering. The contents of the edition (also available in two volumes) somewhat exceed that which can generally be covered in two courses of 3 semester hours each, but the extra chapters can easily be omitted, if there is not time, without harming the course.

In revising their classic text on statics and dynamics, the authors strive for:

- Simplification of text.
- Improved arrangement.
- De-emphasis of algebraic treatment of problems.

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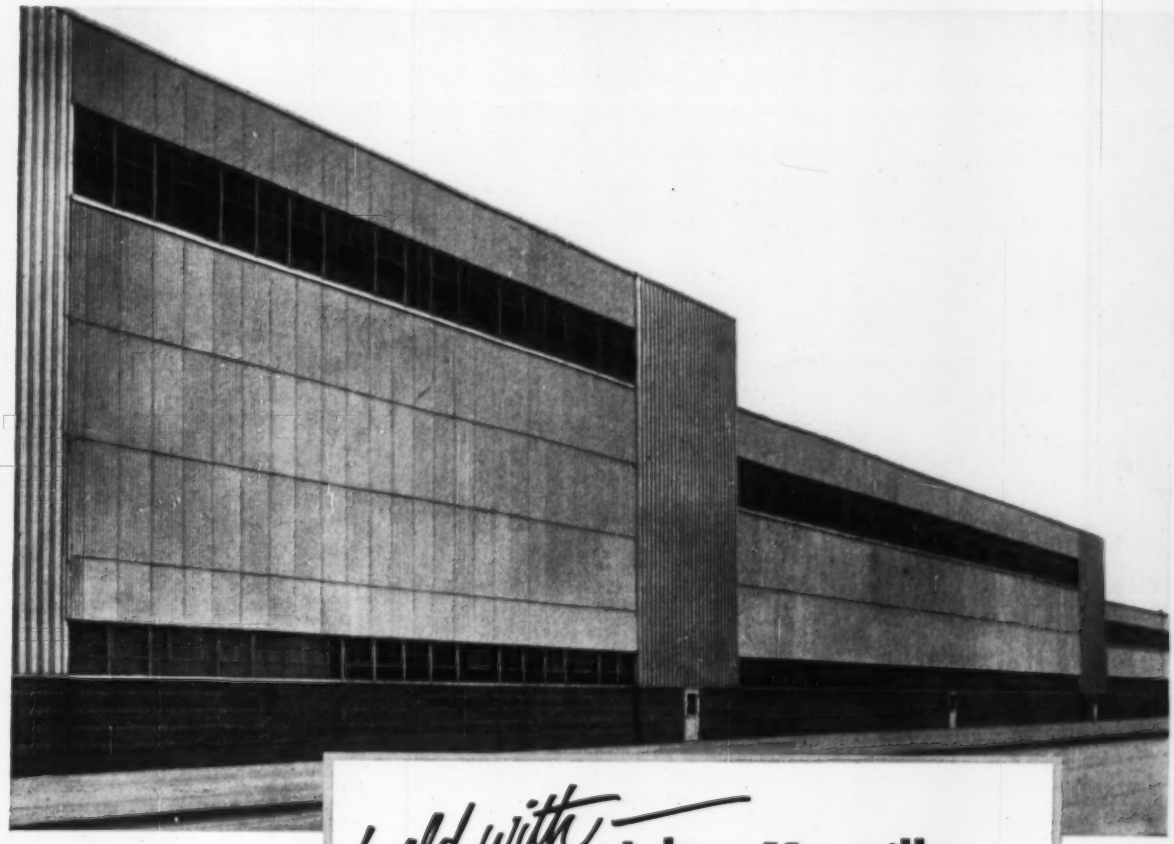

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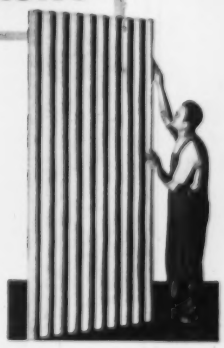

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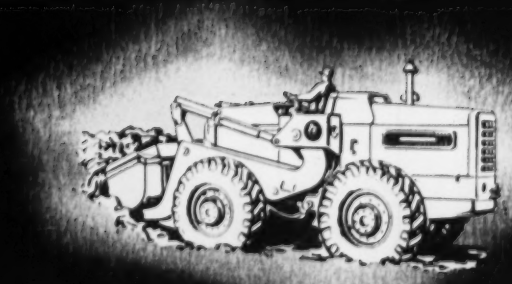

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approach, illustrative examples are given. These are worked out in algebraic form to show the reasoning and approach behind the solutions. Here, if numerical data is given, the substitution is made only at the end of the example.

The wide coverage of the book takes in some important topics. At the end of the statics section there is a chapter on the principle of virtual work. There is a short chapter on relative motion and its applications to engineering problems at the rear of the dynamics portion. Forced vibrations and the balancing of rigid rotors are treated in the appendix.

Together with the authors' earlier volumes on "Theory of Structures" and "Advanced Dynamics" the new text is intended to give the engineering profession a wrap-up treatment of engineering mechanics and its applications to modern structures and machines.

Miscellaneous Notes

Retention of records—A revised 51-page guide on retention of private records for possible government audit and examination appears in the Aug. 28 issue of the Federal Register. A copy of the Register is obtainable for 15¢ from the Superintendent of Documents, Government Printing Office, Washington 25, D. C. Containing nearly 900 entries—each applying to either a single regulation or a group of similar regulations—the guide embraces all requirements in effect at the beginning of this year.

New Engineering Books

Substructure Analysis and Design—by Paul Anderson. Second Edition. 336 pp. Ronald Press Co., 15 E. 26th St., New York 10. $7.00.

Introduction to Plasticity—by Aris Phillips. 230 pp. Ronald Press Co., 15 E. 26th St., New York 10. $7.00.

Theodolite Design and Construction—by E. Wilfred Taylor. 136 pp. Cooke, Troughton & Simms, Ltd., York, England.

Applied Structural Design of Buildings—by Thomas H. McKaig. Second Edition. 442 pp. Dodge Books, 115 W. 40th St., New York 18. $12.50.

Design of Reinforced Concrete—by Boris W. Boguslavsky. 428 pp. Macmillan Co., 60 Fifth Ave., New York 11. $7.50.

Architectural Construction—Second Edition. By Theodore Crane. 433 pp. John Wiley & Sons, 440 Fourth Ave., New York 16. $10.00.

Soil-cement road in New Kent County, Va. Built in 1938.

Old Route K-32, in Leavenworth County, Kan. The soil-cement was placed in 1940.

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Soil-cement road in Chickasaw and Pontotoc Counties, Miss. Road paved in 1939.

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Unit Prices

Colorado Takes Bids on Processing Soil Cement

Processing the soil cement to stabilize the poor soil on this $195,402 state highway will take 15% of the contract price. The cement takes another 27%. Other major items under this contract include excavation, tamping, overhaul, drainage structures and a ST 50 bituminous surface treatment.

Work is for the Colorado State Highway Department in Denver. L. C. Bower is district engineer in Greeley and W. D. Howe is resident engineer in Brush. The job in Washington County, 36 miles from a railroad, extends 8.458 miles from Last Chance to Woodrow.

The successful bid from Siegrist Construction Company of Denver topped the engineers' estimate by 10.5% and was only 0.1% below the second low bid and 7.8% below the high six bids.

Skilled labor is paid a minimum wage of $1.10 per hour, semi-skilled labor $0.70 and common labor $0.50.

The bidders include:

IC Siegrist Construction Co., Denver, Colo.	$195,402
2 Peter Kiewit Sons' Co., Denver, Colo.	197,750
6 N. W. Engineering Co., Denver, Colo.	211,739
Average of five low bids	202,100
EE L. C. Bower, Colo. State Hy. Dept. District Engineer	176,774

Bids: 7-11-56

Items	Unit	Quantity	Unit Prices IC	2
Remov & reset mail boxes	ls	job	$50.00	$100.00
Struct (12'), remov	ls	job	1,000.00	750.00
Cattle pass, remov	ls	job	500.00	300.00
remov	ls	job	500.00	300.00
Culverts, clean	ea	1	100.00	125.00
Gd posts, timb, remov	ea	10	1.00	3.50
Fence, remov	lf	6,200	0.04	0.025
Excav, unclassif	cy	47,000	0.25	0.29
unclassif ditch	cy	100	1.00	1.20
Stripping	cy	4,000	0.10	0.17
Excav, dry rock, struct	cy	30	2.00	2.50
common, struct	cy	420	2.00	2.50
wet rock, struct	cy	10	2.00	2.50
common, struct	cy	50	2.00	2.50
Backfill, struct, cl. 1	cy	630	2.00	2.00
Tamping, mech	hr	90	7.00	5.75
roller, 1 unit	hr	160	5.00	12.00
F W roller, tand	hr	40	8.00	8.00
3-wheel	hr	10	8.00	8.50
rubber tired, 1 unit	hr	120	9.00	5.75
2 unit	hr	40	9.00	9.00
Tamp roller, 1 unit, furn	ea	1	100.00	125.00
F W roller, tand	ea	1	100.00	125.00
3-wheel	ea	1	100.00	125.00
rubber tired, 1 unit	ea	1	100.00	125.00
2 unit	ea	1	100.00	125.00
Wetting	Mgal	3,160	3.00	4.25
Compaction	cy	76,000	0.10	0.08
Overhaul, sta yd	ea	245,000	0.01	0.02
yd mi	ea	6,900	0.15	0.10
ton mi	ea	248,200	0.07	0.08
Subbase matl, cl 2	t	44,100	0.40	0.38
Asph rd matl, rapid cure	gal	30,500	0.175	0.19
same	gal	33,900	0.20	0.23
Stone screen, type 4	t	1,110	6.00	5.00
Cement	bbl	9,380	5.20	5.70
CMP, coated, 18"	lf	284	4.00	3.50
24"	lf	356	6.00	5.50
30"	lf	52	7.50	6.75
36"	lf	222	11.50	11.00
48"	lf	58	15.00	15.00
84"	lf	130	42.00	45.00
Pave, conc sl & dit	cy	18	60.00	68.00
Riprap	cy	10	10.00	20.00
Barb wire	lf	5,600	0.30	0.30
Gd posts, timber	ea	39	10.00	4.00
CMP arch, 43x27"	lf	54	11.50	12.00
58x36"	lf	50	16.00	16.00
Soil cement, process	sy	119,100	0.25	0.19

Time to complete: 90 calendar days.
Liquidated damages: $50.00 per day.

Missouri Storm Sewer Gives Contractors Choice on Pipe

Contractors were given three alternates for bidding on pipe and culverts for this $29,000, 1,721-lin ft storm sewer in St. Louis County, Missouri. In addition the work will be complicated, because heavy traffic must be maintained on Manchester Road and only a very limited amount of open trench is permitted by the Missouri State Highway Commission. Rex M. Whitton is Chief Engineer.

The pipe options include reinforced concrete (selected by the contractor) versus cast iron and vitrified clay for the 24-in. culvert, versus non-reinforced concrete and vitrified clay for 15-in. sewer pipe and against vitrified clay for sewer pipe with a diameter of 27 in. to 33 in. Eight- and 12-in. pipe, however, was specified for vitrified clay leaving no other option.

The $29,058 contract awarded to Paul Krummel of Jefferson City, Mo., is 16.5% below the second low bid and 4% below the engineer's estimate. All landscaping, including trees and shrubs, must be restored to original condition.

Specifications call for a 1:2:3½ concrete mixture.

Prevailing wages rate from $3.575 for skilled labor and $3.325 for semi-skilled to $2.375 for unskilled labor.

Bidders include:

IC Paul Krummel, St. Louis, Mo.	$29,058
2 Latta Bridge Co., Inc., St. Louis, Mo.	34,745
5 Fred M. Luth & Sons Inc., St. Louis, Mo.	47,286
EE Missouri State Highway Department	30,280

Bids: 6-28-56

Items	Unit	Quantity	Unit Prices IC	2
Excav, cl A	cy	20	$35.00	$2.50
cl 3 for struct	cy	2,981	4.46	4.70
Pavement, remov	sy	65	2.50	1.80
Misc items, remov	ls	job	300.00	450.00
Surf, gravel or crush stone	cy	4	12.00	20.00
Pave, conc, 8"	sy	64.5	8.00	15.00
Conc, cl B, other than box culv	cy	3.9	200.00	130.00
cl C, cradles	cy	1.8	18.00	30.00
Culv, 24"	lf	42	5.01	7.50
VCP, sewer, 8"	lf	36	1.40	2.00
12"	lf	24	2.30	2.50
Pipe, 18"	lf	33	3.60*	5.00
27"	lf	41	5.50*	8.00
30"	lf	470	6.45*	8.30
33"	lf	667	7.40*	10.00
Steel, reinforcing	lb	290	0.15	0.30
Rubble masy in mortar	cy	5	20.00	40.00
Brick masy, manholes	cf	632	2.30	4.40
Curb & gutter, conc	lf	20	3.50	2.50
Approach, paved, 7"	sy	38	8.00	10.00
Gutter, cobblestone	sy	4	11.00	10.00
Sidewalk, conc, 4"	sy	10	6.30	8.00
Grates & bearing plates	lb	840	0.60	0.45
Manhole frame & cover	ea	6	49.00	60.00
Curb inlet	ea	3	125.00	50.00
Sodding	sy	260	0.70	1.00
Base, rolled stone, 7"				
Water, 100 gal	ea	34	1.00	1.30
Aggregate	t	158	3.00	3.50
Spread, shape & compact	sy	410	0.20	1.30
Pavement, asph conc, 1½"				
Primer, RC-0 or 60-100 pen asph	gal	210	0.20	0.40
Sanding primer	t	1	10.00	6.00
Asph conc, type C	t	34	13.50	15.00

Time to complete: 50 working days.
Liquidated damages: $50 per day.
* based on RC, 2nd low bid not specified.

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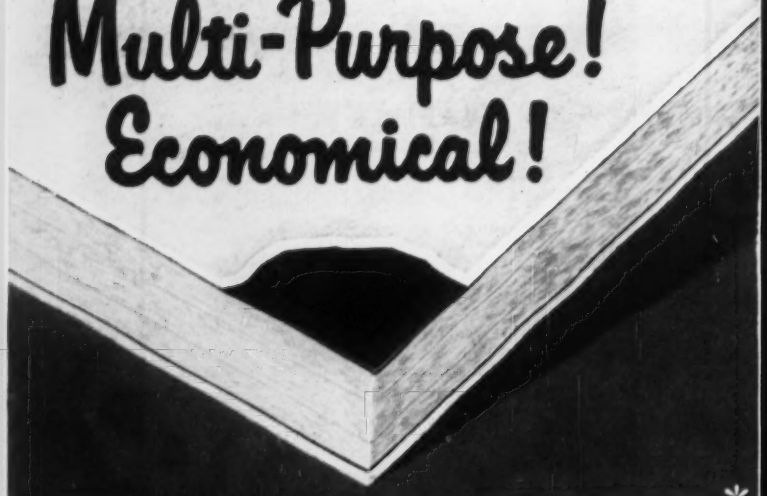

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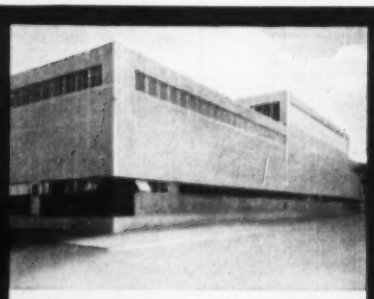

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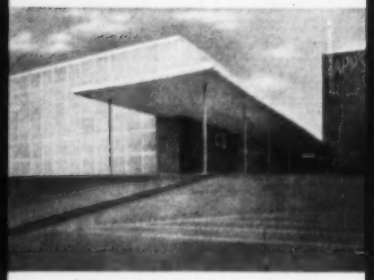

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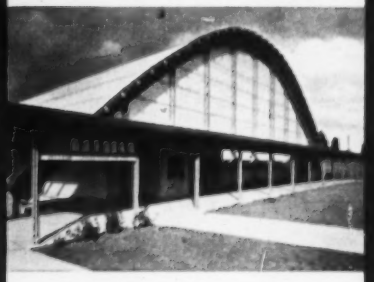

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Materials and Labor Prices Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Oct 4—Cement, Aggregate, Ready-mixed Concrete, Asphalt
- Oct 11—Iron and Steel Products, Pipe
- Oct 18—Wood Products, Glass, Explosives, Chemicals
- Oct 25—Clay Products, Lime, Plaster, Paint, Roofing

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Atlanta	$148.25p	$148.25p	$296.50p	$333.55p			$30.50p	$32.70p	$23.50	$24.50	$
Baltimore	203.00	217.00	406.00	425.50	595.00	681.00	36.00k	41.00k	33.00	22.00	
Birmingham	135.00p	152.00p		303.00p	376.00p	465.00p	27.00ff	38.00gg	33.35	22.30	26.33
Boston	210.60†	224.60†	421.10†	467.80†	.....	.....	40.00p	44.00p	35.70††	30.00††	.....
Chicago	135.00	145.00	280.00	.....	.....	.....	30.00	32.00	36.00	29.00	.....
Cincinnati	205.00j	225.00j	296.00jdd	213.00j	288.00j	314.00j	45.00y	46.00y	28.50j	24.25i	28.50j
Cleveland	202.50**	215.00**	.....	.....	.....	.....	40.00	42.00	29.75	26.00	.....
Dallas		152.00	.....	.....	.....	.....	25.75	45.00	32.00	31.00	.....
Denver	.....	.....	.....	.....	.....	.....	36.00	47.50	34.00bb	28.00bb	34.00bb
Detroit	213.00	226.00	425.00	.....	620.00	710.00	44.50cc	44.00cc	34.00	30.00	.....
Kansas City	127.50	147.50	270.00	270.00	340.00	400.00	33.00	33.00	32.00	27.50	28.50
Los Angeles	r	r	r	r	r	r	30.50¶		34.00	34.00	35.00
Minneapolis	188.00p	210.00p	429.00p	210.00pw	.....	.....	43.00*p	52.50tt	44.50bbe	35.50bbe	47.50bbdo
Montreal	184.00aq	178.00au	325.00au	270.00	288.00	.....	42.00	49.00	39.00	22.00	13.75u
New Orleans	188.00	188.00	380.00	380.00	.....	.....	40.00	55.00	30.60	21.50	21.50
New York	158.10h	168.60h	231.70ch	255.20hh	.....	.....	44.00		37.00	35.00	
Philadelphia	156.30	166.80	312.70	375.20			30.34	34.40	27.60	25.60	3.17
Pittsburgh	154.00	162.00	292.00	340.00	420.00	495.00	36.00	46.00y	32.00	29.50	2.97m
St. Louis	178.50cc	203.00cc	358.00cc	500.00cc	.....	.....	43.00dd	41.50e	1.00eee	85eee	1.30ee
San Francisco	156.85o*	177.10o*	235.30ddo*	.....	.....	.....	39.50*	39.50*	27.75	27.75	30.50
Seattle	225.00cc	250.00cc	450.00cc	250.00ccw	.....	.....	43.00e	55.00e	48.00ddA	38.25ddA	3.90mmAA
Toronto	138.70	148.90	273.75	222.00f	.....	.....	38.00	63.00	40.00	33.50	31.00

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PAINT, ROOFING—F.O.B. CARLOAD LOTS

	RED LEAD Per 100 lb. in 600-lb. (Approx.) bbl. Dry a	WHITE LEAD Per 100 lb. in 100 lb. cases In oil w	READY-MIXED PAINT Per gal., drums Graphite b	Aluminum c	Ferric Oxide d	ROOFING SUPPLIES; Carload lots f.o.b. factory Rolls, slate surfaced, 85-90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 380 lb. bbl. per ton
Atlanta	$19.25	$28.27.5	$3.50	$3.86	$3.31	$3.15	$2.95	$2.95	$0.63	$57.75
Baltimore	19.00	27.90	2.75	4.25	3.35	2.78	4.25	4.25	.48	50.18
Birmingham	19.25	28.27.5	3.90	3.40	....	3.37	2.80tt	2.80tt	.87ff	42.65ee
Boston	19.00	27.90	....	....	....	3.30g g	2.85ag	2.85ag	.45g	86.00g
Chicago	19.00	27.90	....	....	....	3.57‡u	3.00‡a	3.00‡a	.43 80‡88e	82.70‡
Cincinnati	19.00	27.90	....	....	....	3.15	2.63	2.63	.504y	50.38
Cleveland	19.00	27.90	2.297pq	2.587pq	2.736pq	3.15q	2.62a	2.62a	.464y‡	47.00AA
Dallas	19.25	28.65	....	3.13ff	....	3.50p	3.75a	4.35a	.38a	58.50AA
Denver	19.50	28.40	3.29	5.15	3.04	2.84	2.30a	2.30a	.48ff	45.00
Detroit	19.00	27.90	3.38	3.25	2.80	2.656	2.409	2.409	.53	47.30
Kansas City	19.00	28.65	3.64	3.12	2.76	3.65tt	3.45a	3.69a	.58y	83.20
Los Angeles	19.00	28.15	3.30m	4.50m	4.20m	3.20m	2.15en	f	.70sy	f
Minneapolis	19.00	29.88/28.02	....	....	....	2.835dd	2.358tidd	2.358tidd	.416dd	48.00r
Montreal	.....	21.95	5.02Dff	5.94Eff	4.65Fff	5.25f	4.65f	4.65f	1.60	....
New Orleans	.....	.....	....	....	....	3.15	2.62	2.62	0.756	....
New York	19.00	27.90	....	....	....	2.84G	2.366a	2.366a	.4630a	48.00*
Philadelphia	19.00	27.90	3.60	3.40/3.65	3.50/4.60	2.84	2.94	2.94	.37	26.00
Pittsburgh	19.00	27.90	3.10	3.36	3.68	3.72	2.85a	2.85a	.42	58.75
St. Louis	19.00	27.90	....	....	....	2.86a	2.30A	2.30A	.46y	54.35
San Francisco	19.00	28.15	2.95	4.15	3.40	2.70	1.85**	2.85tt	.56	54.00
Seattle	19.00	28.40	3.30mcc	4.02mcc	....	3.81mcc	3.33Amcc	....	.65mcc	47.20mm
Toronto	..	.....	....	....	....	4.45	4.10e	4.65a	1.70j	88.00t

*‡ Delivered. * Note: Red lead in oil 50¢ higher than white lead in oil. *a Red lead prices change frequently due to pig lead price changes. *b U. S. War Dept. Spec. 3-49A. *c ASTM Spec. D266-31. *d 80% minimum ferric oxide. *e 15 lb. *f Per 432 sq. ft. *g F.o.b. yard, Roxbury. *h Per roll, 65 lb. *i Net carload lot prices; Minneapolis and vicinity. *j 45 gal containers. *k Per cwt. *l Not used. *m 1% discount for cash. *n F.o.b. city. *o Per 60-lb. roll. *p 6-drum, 50 gal. ea. *q Per 90 lb. roll. *r F.o.b. factory, Chicago. *s Truckload. *t Federal tax included, add 5% mun. & prov. tax. *u Per 90-lb. square. *v Per ton. *x Mineral surfaced. *y 55-gallon container-*z Drums. *aa 15 lb., 324 sq ft roll. *bb Roofers coating and cement; Price per ton. *cc LCL, truck delivery. *dd 2% cash discount. *ee Asphalt pitch in 100 lb. package. *ff 5-gal. drums. *gg F.o.b. factory. *hh Incl. freight. *ii Per roll. *A 400 lb barrels. *B ASTM Spec D-962-49. *D Std. Black. *E Ready-mixed. *F Over 80% ferric oxide. ** Aver. wt. approx. 425 to 550 lbs. drums. *G F.o.b. factory points.

PLASTER, VERMICULITE AND METAL BUILDING SHEETS & TUBING

	PLASTER† Neat per ton	Gauging per ton	VERMICULITE† Home Insulation pellets	Plaster aggregate	Concrete Aggregate Untreated	PERLITE Plaster Aggregate	Concrete Aggregate Untreated	ALUMINUM SHEET& Flat: .102" th 36"x96" & 48"x144" per lbr	Corr roof .032" th 15"x12" per sh‡	STAINLESS STEEL SHEET*-TYPE 302‡ 20 ga 48"x96 120" per cwt&&	28 ga 18"x120" per cwt‡‡	COPPER WATER TUBING-TYPE L 2000 ft lots per ft‡ 3/4"&	1"&
			per bag of 4 cu ft										
Atlanta	$30.00	$35.00	$1.55s	$1.45s	$1.80d	$1.90	$1.90	$0.422n	$6.57r	$61.44n	$62.50m	$18.11f	$25.11f
Baltimore	22.85	33.25	0.95	1.15	1.15	1.15	1.65	0.391	9.427r	56.25	64.25	0.1951	0.2745
Birmingham	38.00	43.00	1.55	1.55	1.80f	1.55	1.55	0.475	9.52	62.25	70.75	0.1811	0.2541
Boston	22.00	29.00	1.15-1.20	1.18-1.23	1.45	1.45	1.50	0.505	28.56up	59.37.5dd	65.51.66fff	0.1811	0.2541
Chicago	26.80	26.80	1.55	1.00	1.00f	1.50	1.50	0.474	9.915‡p	62.40eee	70.90eee	0.1811	0.2541
Cincinnati	21.60**	21.60**	1.75	1.75	1.75	1.38	1.44	0.400	8.66	60.95	66.20ff	0.1811	0.2541
Cleveland	28.00	43.00	1.13	1.16	1.24f	1.45	1.45	0.44aa	8.66	62.43	70.93	18.11f	25.41f
Dallas	29.80	31.80	1.20	1.25	1.30f	1.21	1.62	0.379	9.439r	55.00	63.00	0.1460	0.2029
Denver	25.00	25.00	1.45	1.35	1.50	1.40	1.55	0.444	9.90	60.15gg	70.00gg	0.1811	0.2541
Detroit	25.00	25.00	1.25	1.32	1.41	1.54	1.61	0.455	9.235	62.50ff	71.00ff	15.22fff	28.83f
Kansas City	30.00	35.00	1.20	1.30	1.40	1.35	1.50	0.451	10.95	62.32	70.32	20.54f	28.83f
Los Angeles	26.20	27.20	1.25tt	1.20tt	1.25tt		1.60	0.484	8.96	61.85	82.10	0.2054	0.2883
Minneapolis	32.00	32.00	1.50	1.60	1.80	1.40	1.40	0.481	8.65	62.87	76.37ff	0.1951	0.2541
Montreal	28.80	33.20	1.10	1.30	1.30	1.15e	1.15e	0.417	9.25	66.90		0.2014	0.3222
New Orleans	32.00	45.00	1.25	1.25	1.35	1.25	1.25	0.422	8.303	57.18	65.18	0.1967	0.2706
New York	24.00	30.00	1.25	1.25	1.30	1.30	1.30	0.4744n	9.16r	63.23	71.73	18.11f	25.41f
Philadelphia	23.25	32.00	1.35	1.35	1.40			26.56hhee	7.50r	53.23f	60.50f	18.52f	26.00f
Pittsburgh	27.50	31.00	1.30	1.30	1.32	1.35	1.35	0.42	9.15	56.41	62.63	0.2065	0.2822
St. Louis	29.00	40.00	1.30	1.55jj	1.50	1.60	1.65	0.447	9.40	62.83	69.08	18.11fm	25.41fm
San Francisco	27.85	32.00	1.15	1.15	1.35	1.10	1.10	0.48	8.96r	66.90	75.47	0.1811	0.2541
Seattle	38.00	41.00	1.45	1.25k	1.85f	1.40k		0.422	8.303	64.10	72.60	0.1951	0.2745
Toronto	32.50	42.00	1.20	1.30	1.35			0.412	21.55	71.00	80.50	0.3298pp	0.4136pp

† trucklots, delivered * carload ‡ delivered *a fob city *b 1½" O.D. *c 1¼" O.D. *d per 100 ft *e 5 tons & up; cold roll, anneal & pickled; 2B finish. *f 15M lb up *g 1100 & 3003 alloy, mill finish *k per bag of 3 cu ft *l treated with air entraining agent *m 2-10M ft *n fob plant, fr allow *o 5M lb & up *p 100 sq ft quantity *r per lb *s 30¢ bag *t 36" x 96"; 10.81 lb sh; 48" x 144"; 21.7 lb sh *u 19.31 lb sh *v fob plant *w 48" x 144" *x 36" x 96" $13.25/sh *aa 16M lb & up *bb fob mill *cc 28" x 8.12" *dd add $0.75 cwt for boxing *ee 4 tons & up *ff 26 ga *gg add $2 cwt boxing; $0.75 cwt on skids *hh Theoretical wt for 48" x 96"; 50.4-lb. per sh. *ii 300-bag lots *jj per 100-lb bag *mm Theoretical wt: 19.7-lb per sh. *nn Deliv. warehouse means *oo ¼" O.D. *pp Incl 10% sales tax.

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Oct. 4—Cement, Aggregate, Ready-mixed Concrete, Asphalt
- Oct. 11—Iron and Steel Products, Pipe
- Oct. 18—Wood Products, Glass, Explosives, Chemicals
- Oct. 25—Clay Products, Lime, Plaster, Paint, Roofing

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	GYPSUM PLASTER BOARD tapered edge per Msq ft ½"	⅝"	GYPSUM BOARD LATH plain or perf per Msq ft ⅜" x 16" x 48"	GYPSUM SHEATHING tongue & groove per Msq ft ½" x 2' x 8'	FIBER BOARD SHEATHING asph impreg & coat per Msq ft ½" sq ed	½" T&G	FIBER BOARD INSULATION sq edge, paint per Msq ft ½"	MINERAL WOOL INSULATION† loose, per 40-lb bag	3" batts per M sf	GLASS FIBER INSULATION† loose, per 40-lb bag	3" batts per M sf	ALUMINUM FOIL 60¢ Kraft Expansible 1 side foil Blanket 2 per roll of 250 s. f.	layers foil per Msq. ft
Atlanta	$70.00	$80.00	$43.00	$70.00	$70.00	$127.00	$27.00	$1.00	$60.00	$1.65b	$65.00	.....	.....
Baltimore	81.25f	44.78f	32.55f	55.00f	65.00f	108.50f	69.00f	1.30	66.50	1.80	45.00	$4.00g	$33.50
Birmingham	73.00	60.00	47.77	75.00	80.00	134.00	79.00	1.40	70.00	1.80	75.00	2.99g	.....
Boston	87.00m	46.50m	33.00m	52.00m	64.00m	109.00m	79.00An	1.45	70.00	.....	53.00	6.00	55.50
Chicago	87.00	52.00	43.00	62.00	85.00	123.00	85.00	1.85	80.00	.....	63/65bb	5.25e	.....
Cincinnati	46.40w	41.60w	30.80w	49.81w	67.50w	120.00w	70.00w	1.25	60.00	1.25	73.50	2.94	50.00w
Cleveland	60.50	55.00	40.00	65.00	70.00	111.00	70.00	1.35/1.50	75.00	1.60**	57.50**	17.50*	50/55
Dallas	58.00	55.00	42.50	65.00	73.50	122.50	70.00	1.90	85.00	1.35	65.83	4.25	.....
Denver	82.00	54.50	41.00	62.00	75.90	126.00	74.90	.....	71.00x	1.20*	55.00	11.00r	21.00
Detroit	59.00	53.00	36.00	60.00	58.50	98.00	57.50	.....	.....	1.95b	83.00	.....	.....
Kansas City	65.00	55.00	40.00	65.00	72.00	120.00	75.00	1.40	80.00	1.40	80.00	11.24dt	19.44
Los Angeles	64.00	59.00	0.32⅝z	66.50	71.87	121.25	80.00	.....	83.00	1.38a	64.00	4.20g	.....
Minneapolis	80.00	70.00	0.40z	80.00	70.00	140.00	78.00	1.80	80.00	1.80	80.00	6.50	.....
Montreal	56.00	48.00	36/39	53.00	60.00.		63.00	1.30	56.00	1.30	56.00	18.00e	56.00
New Orleans	55.00	48.00	45.00	70.00	75.00	125.00	72.50	1.75	68.00**	.....	.....	.....	.....
New York	53.00	45.50	35.00	54.00	69.00	109.00	70.50	1.55	65.00	1.90*	67.00	5.20†	48.80cc
Philadelphia	50.00	48.00	34.00	48.50	67.50	105.00	49.20		63/70		70/75	5.50/6	34.50/44.50
Pittsburgh	65.00	55.00	40.00	68.00	65.00	105.00	60.00	1.90	72.00	1.90	72.00	4.10	.....
St. Louis	62.00	55.00	39.00	65.00	65.00	110.00	75.00	1.60	80.00	1.65	62.00	6.67s	.....
San Francisco	82.00c	44.75	0.34z	66.00	59.00	99.00	58.00	1.80	66.50	1.55	66.50	4.95	55.00
Seattle	66.00	57.50	46.50	65.00	74.50	125.00	73.50	1.60y	74.00	1.80aaz	48.00aa	4.25g	46.50
Toronto	61.00	50.00	38.00	64.50	75.00	.....	.....	0.90	51.00	.....	51.00	17.00e	43.65

*a for hand packing *b per 30¢ bag *c carloads *d 40¢ kraft paper *e 20¢ sq ft bag, 4" thick *f full trailer loads *g 80¢ kraft paper backing *h LCL *i 40 lb roll *j flame-proof $75.00 *m 10 ton quantities *n distributor's siding *o per Msf roll *p per sf *r per cwt *s per 35¢ bag *t per M sq ft *w fob city *x per sq. yd. *y 26¢ bag *z 32¢ bag *aa fob warehouse *bb 2" *cc in 250 sf rolls, of 16", 20", or 24" width.

HOURLY WAGE RATES—Base rate + fringe benefits

	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor Building	Common Labor Heavy Const
Atlanta	$3.35	$2.80	$3.05	$2.80	$3.00	$3.20	$3.20+25ccc	$1.45	$1.45
Baltimore	3.45+10¢d	2.95+7½¢	3.50+7½¢	2.70/2.95+10¢d	3.25+7½¢	3.30	3.20+7½¢	1.60+7½¢	1.60+7½¢
Birmingham	3.50	2.70	3.00+7½¢	2.52	2.92	3.175	3.17+10¢	1.50	1.60
Boston	3.50+10¢d	3.05+10¢d	3.55+7½¢	3.50	3.50+20¢f	3.30+12¢ff	3.20+10¢d	2.30+7¢f	2.30+7¢f
Chicago	3.62½+7½¢	3.35+10¢d	3.55+7½¢	3.25+5¢m	3.54+23¢e	3.48+21¢f	3.37+22¢ee	2.57½+7½¢d	2.57½+7½¢d
Cincinnati	3.60	3.30	3.35+7½¢	3.075/3.325	3.375	3.50+3¢N	3.50+9½¢f	2.35	2.25
Cleveland	3.55+10*	3.575	3.50+7½¢	3.575	3.575	3.60	3.375+10¢e	2.825	2.75
Dallas	3.70	2.95	3.075	3.00+7½¢	3.437+7½¢	3.12½+7½¢	3.10+7½¢	1.55	1.55
Denver	3.625	3.075	3.00+7½¢	2.93	3.30+7½¢	3.00	3.17+15¢ff	2.00	2.00
Detroit	3.53+20¢ee	3.20+20¢e	3.47½+20¢ff	3.20+20¢eee	3.51+2½¢ee	3.50+30½¢ff	3.45+14¢ff	2.45+20¢eee	2.55+10¢e
Kansas City	3.70	2.90	3.075	3.055	3.375	3.325ff	3.15+7½¢	2.155	2.18
Los Angeles	3.50	3.10+10¢d	3.40+10¢e	2.95+10¢d	3.75+12½¢ff	3.60	3.525+10¢e	2.30+7½¢	2.30+7½¢
Minneapolis	3.425	3.00	3.17	2.95	3.05+23½¢ee	3.12m	3.00+20¢e	2.25	2.25
New Orleans	3.25	2.675	3.00+7½¢	2.80+7½¢	2.82½+5¢m	3.025+7½¢	3.05+15¢e	1.55	1.55
New York	4.05+30½¢ff	3.65+292½¢ff	3.95+34¢e	3.90+31¢f	4.00+50¢ff	3.50+35¢ff	3.85+35½¢ff	2.60+21¢f	2.60+21¢f
Philadelphia	3.75+17¢e	3.385	3.55+15¢eee	3.15½/3.90½+10¢e	3.65+15¢ee	3.77+15¢ee	3.75+11½¢e	2.10	2.40
Pittsburgh	3.75+17½¢ee	3.325+7½¢	3.30+7½¢	3.35+7½¢	3.40+17½¢ee	3.50	3.425+7½¢	2.25+5¢e	1.98+10¢e
St. Louis	3.75+19¢e	3.25+7½¢	3.25+7½¢	3.325	3.425+7½¢	3.60+25¢e	3.55+21¢ff	2.30+7½¢	2.30+7½¢
San Francisco	3.75+12½¢e	3.25½+10¢e	3.40+10¢e	2.95+10¢e	3.61+20¢ee	3.37½+23¢ff	3.45+46¢ff	2.325+10¢e	2.375+10¢e
Seattle	3.55+10¢d	2.80+10¢d	3.07+10¢d	2.90+10¢d	3.27½+10¢d	3.20+19½¢ff	3.15+21¢ff	2.37+10¢d	2.37+10¢d
Montreal	2.10+14¢t	1.90+14¢t	2.00+14¢t	1.80+14¢t	2.12+18¢t	2.10+18¢t	2.12+18¢t	1.30+10¢t	1.30+10¢t
Toronto	2.61+10¢**	2.40+10¢**	2.40+10¢**	2.50+10¢**	2.45+10¢**	2.65+10¢**	2.44+10¢**	1.45+6¢**	1.45+6¢**

ENR Skilled Average (Bricklayers, Carpenters, Iron workers): $3.420. **ENR Common Average** $2.192

* Cost of living bonus now included in basic wage. † 8% fringe benefits. ** 4% vacation fund. *a 6 hr. day. *b 7 hr. day. *c 3% vac. stamp fund plus 7½¢ WF for bricklayers; 4% VF for electricians plus 8¢ WF, 1% PF. *d 10¢ H&WF. *e 10¢ VF. *f 6% WF. *g 11½¢ WF. *h $2.85 homes & housing plus 7½¢ WF. *l 17¢ WF. *j 10½¢ hr. WF. *k 7½¢ hr. WF. *l4½ VF. *m 8¢ hr. WF. *n Plus 11½ fringe benefits on gross wage ea. yr. *o 10¢ PF. *p 3% WF, 3% PF. *q 10¢ ins.; 8¢ vac. and holi-day pay. *r 4% WF and 20¢ PF. *s 5½ W&PF, 4½ VF, 1½ NC, 6 PH. *t 7½¢ H&WF. *u 1½ PF. *v 10¢ WF. *w Negotiating. *x 5¢ VP. *y 23¢ WF. *z 5¢ HP. *A 15¢ WF, 15¢ PF, 20¢ B.F. *B 7½¢ VP, 5¢ PF, 1½¢ EF. *C 15¢ WF. *D 10¢ H&WF, 5¢ organ. *E 6½ WF, plus travel pay per day. *F Plus $4 per day Annuity contrib. *G 3¢ Prom. *H 7¢ WF, 6½ VF. *I 15¢ H&WF, 5¢ for Advtg. *J 5½ WF, 6 PH. *K 25¢ W & PF, 15¢ VF. *L 3½ WF, 3½ PF, 2½ VF, 1½ EF. *M 7½¢ PF. *N 1½ WF. *P 10¢ hosp. ins.; 5¢ vac., 5¢ VF. *Q 1 drum, 2 drums 3.40/3.55+10¢. *R 12¢ WF and 1¢ apprentice. *S 12½¢ H and WF. *T 21¢ H, W & VF. *U 7½¢ WF, 4½ VF, 1½ PF. *V 5½ WF, 3½ PF. *W 2½ F. *X 12¢ VF, & 7½¢ H & WF. *Y 7¢ H & WF. *Z 9½¢ WF. *aa 7¢ WF, 15¢ PF. *bb 8¢ WF. *cc 25¢ WF.

	Truck drivers 1½ T	Truck drivers 4 cy	Truck drivers +4 cy	Tractor Operators incl. bulldozers 34-49 hp	70-100 hp	100 & over	Tractor scraper 15-18 cy	Power cranes & shovels ½ cy	Power cranes & shovels ¾ cy	Motor grader oper	Air comp oper	Air tool oper
Atlanta	$1.50	$	$	$2.525	$2.525	$2.525	$2.525	$3.05	$3.05	$2.525	$3.30	$1.67
Baltimore	1.60+7½¢e	1.75+7½¢e	1.85+7½¢e	2.85/3.30b	2.85/3.30b	2.85/3.30b	2.85/3.30b	3.40/3.55+11¢e	3.40/3.55+10¢e	2.85/3.30b	2.85/3.30b	2.25
Birmingham	1.60	1.79ff	2.05ee	2.66	2.66	2.66	2.80	2.80	2.80	2.76	2.385	1.75
Boston	2.195e			3.025d	3.025d	3.025d	3.025d	3.40	3.40	3.40	2.95	2.45+7¢e
Chicago	2.08+12¢ff*			3.00+5¢e	3.15+5¢e	3.05+5¢e	2.85+5¢e	3.60+5¢e	3.60+5¢e	2.95+5¢e	2.95+5¢e	
Cincinnati	2.20oo	2.30oo	2.40oo	3.075	3.075	3.075	3.075	3.325	3.325	3.325	3.325	3.325
Cleveland	2.50+10¢m	2.50+10¢m	2.50+10¢m	3.325	3.325	3.325	3.325	3.575	3.575	3.325d	3.20	3.20
Dallas	1.55	1.55	1.55	1.55/2.625f	1.55/2.625f	1.55/2.625f	1.55/2.625f	1.55/2.625f	1.55/2.625f	1.55/2.00f	1.70/2.00f	1.70/2.00f
Denver	2.15	2.15	2.25	2.15	2.76	2.76	2.76	2.93	2.93	2.76	2.76	2.35
Detroit	2.45	2.45	2.45	3.30+10¢m	3.30+10¢m	3.30+10¢m	3.30+10¢m	3.30+10¢m	3.30+10¢m	3.30+10¢m	3.025+10¢m	2.68+20¢ee
Kansas City	2.115e	2.115e	2.19e	2.30	2.85e	2.85e	2.85e	3.095	3.095	2.71	2.85e	2.24
Los Angeles	2.405+7½¢e	2.405+7½¢e	2.435+7½¢e	3.05+10¢m	3.05+10¢m	3.05+10¢m	3.30+10¢m	3.30+10¢m	3.30+10¢m	3.30+10¢m	2.54+10¢m	2.51+7½¢e
Minneapolis	2.25	2.25e	2.40e	2.63	2.85e	3.07e	2.85	3.07e	3.33e	2.63	2.52	2.35
New Orleans	1.675	1.925	1.925	2.15+7½¢u	2.80+7½¢u	2.80+7½¢u	2.80+7½¢u	2.80+7½¢u	2.80+7½¢u	2.80+7½¢u	2.15+7½¢u	1.625
New York	2.21aa	2.75+14¢ss	2.75+14¢ss	3.27½+262½¢ee	3.27½+262½¢ee	3.27½+262½¢ee	3.40+272¢ee	4.15+332¢ee	4.15+332¢ee	3.40+272¢ee	3.40+272¢ee	3.00+15¢ee
Philadelphia		1.925/2.15+7½¢e			3.15½/3.90½+10¢m		3.15½/3.90½+10¢m		3.15½/3.90½+10¢m	3.15½/3.90½+10¢m	2.97½+10¢m	2.13½+10¢m
Pittsburgh	2.20+7½¢e	2.20+7½¢e	2.20+7½¢e	2.87½+7½¢e	3.20+7½¢e	3.27½+7½¢e	3.025+7½¢e	3.35+7½¢e	3.35+7½¢e	3.25+7½¢e	3.35+7½¢e	2.20+7½¢e
St. Louis	2.30+7½¢eee			3.325kk	3.325kk	3.325kk	3.325kk	3.325kk	3.325kk	3.325kk	2.775kk	2.775kk
San Francisco	2.32½+10¢e	2.32½+10¢e	2.465+10¢	3.095+10¢m	3.095+10¢m	3.095+10¢m	3.095+10¢m	3.425+10¢m	3.425+10¢m	3.255+10¢m	2.705+10¢m	2.425+10¢m
Seattle	2.63+7½¢ee	2.63+7½¢ddd	2.83+7½¢ee	2.78+10¢m	2.95+10¢m	2.95+10¢m	2.95+10¢m	3.36+10¢m	3.36+10¢m	3.10+10¢m	2.78+10¢m	2.52+10¢m
Montreal	1.30+10¢ll	1.30+10¢ll	1.30+10¢ll	1.73+14¢ll	1.73+14¢ll	1.73+14¢ll	1.73+14¢ll	1.99+10¢ll	1.99+10¢ll	1.73+14¢ll	1.80+15¢ll	1.60+15¢ll
Toronto	1.47+6¢ss	1.45+6¢ss	1.65+7¢ss	1.90+5¢ss	2.00+10¢ss	2.00+10¢ss	1.90+5¢ss	2.50+16¢ss	2.50+16¢ss		2.05+8¢ss	2.05+8¢ss

*a 5¢ hr HWF *b lower rates, straight time, other broken *c 2-axle; 10-wheel $2.25; Euclid $2.45 *d Intermediate *e bldg constr; highway $2.55+7¢ WF *f less than 2-1 *j plus $2 pd by employer for hosp. death benefits to family *k bldg constr; steel constr $3.475 *l higher rates are union, other taken from min wage scale approved by County Commissioners Court *m 10¢ H&WF *n flatbed *o under 10 cy *p over 10 cy *q over 50 hp *r blade grader *t single *u 7½¢ HWF *x cat oper *y up to 3½ cy *z 3½ cy & over *aa plus W & PF *bb 3½ WF, 2½ PF, 11 PH *cc 4½ WF & 4½ PF *dd up to 5 cy *ee 5 cy & over *ff over 1½ T but not over 3 *gg up to 5 tons *hh excavating *ii 4½ VP *kk 7½¢ WF included in base pay *ll 8% fringe benefits *mm 10¢ H & WF, 10¢ insurance *nn 8 cy or less; 8-16 cy $2.90; 16-25 cy $3.15 *oo Plus $2.25/wk WF *rr 12¢ WF *ss 5½ WF.

MEXICO CITY PRICES

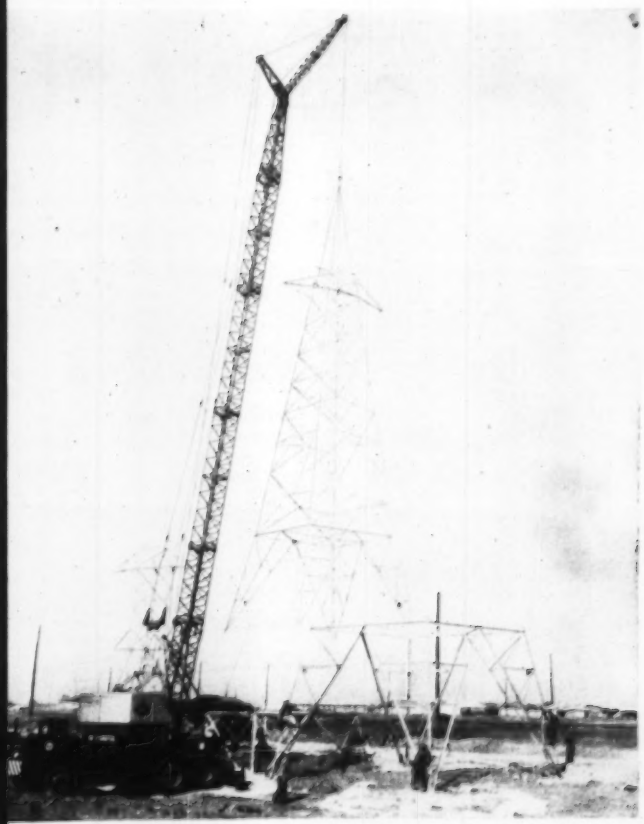
In Pesos, f.o.b. City		July '56	Aug. '56
Common Wages—Building (8 hr. day) (Peons)	av. per hr.	1.38	1.38
Common Wages—Heavy Const. (8 hr. day) (Peons)	av. per hr.	1.38	1.38
Skilled Labor Wages			
Carpenters (8 hr. day) 1 cl.	av. per hr.	2.48	2.48
Bricklayers (8 hr. day) 1 cl.	av. per hr.	2.48	2.48
Struct. Iron Workers (8 hr. day) ....Remachadores.	av. per hr.	3.77	3.77

Struct. Steel, Shapes		July '56	Aug. '56
3"-15" x 12 meters....per metric ton		2100.00¢	2100.00¢
¢ fob Monterrey			
Reinf. Steel, Corr. Rods			
⅜" x 11 meters	per ton	1865.00	1825.00
½" x 11 meters	per ton	1865.00	1800.00
⅝" x 11 meters	per ton	1865.00	1800.00
¾" x 11 meters	per ton	1865.00	1800.00
⅞" x 11 meters	per ton	1865.00	1800.00
1" x 11 meters	per ton	1865.00	1800.00

Gravel truck load at 3½ cu. meters		July '56	Aug. '56
Blue Gravel	per tr. load	70.00	75.00
Rose Gravel	per tr. load	65.00	69.00
Cement, Std. Port. (Tolteca)	per ton	230.00	240.00
Lumber			
1" Pine	per M ft.	1750.00	1825.00
1½" Pine	per M ft.	1850.00	1900.00

"Our **LIMA** Truck Cranes give us fast, smooth, precise lifts on every job"

says F. S. Oldt Co., Dallas



"Our Lima truck cranes give us fast, smooth, precise lifts on every job . . . from erecting the 'Ole Man Texas' figure at the State Fair (above left) to standard erecting jobs like the 100 ft. tower (left)." That's the report from F. S. Oldt Company, Dallas, Texas.

They continue: "Truck mounted, the cranes move from job to job fast. Performance is tops, and downtime far below average. That kind of service has kept us coming back for more since 1945. Now we have six Limas . . . the two truck cranes (one Type 44 and one Type 54) plus four crawler mounted Type 54s."

Like F. S. Oldt Company, *you* can rely on Lima's quality design and construction to give you top service for every job. It will pay you to get the full story on Lima quality today. See your nearby Lima distributor or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

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Bids Asked—Low Bidders—Contracts Awarded—First Section—

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J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BUILDINGS—BA

Conn., Bloomfield—SCHOOL—BA 10/9—Town, School Bldg. Comm., Town Hall, Wintonbury Elementary School, $500,000. Plans deposit $50. Extended date. Jeter & Cook, 36 Pearl St., Hartford, archts. Robt. W. Loomis, 32 Maple Ave., Windsor, engr. CD 4/4.

Conn., East Hartford—HOUSING—BA 10/9—East Hartford Housing Auth., 70 Cannon Rd., Proj. MR-58, moderate rental housing. $605,000. Plans deposit $25. Kane & Fairchild, 734 Asylum Ave., Hartford, archt. John P. Legnos, 30 Gillett St., Hartford, engr.

HEAVY CONSTRUCTION—LB & CA

▲ NEW HAMPSHIRE—Dpt. P. Wks. & Hys., Concord, Frank Palazzi & Sons, Inc., 2321 Hartford Ave., Johnston, R. I., LB $1,342,951, 2¾ mi. road mix hy., five bridges, Sapulding Turnpike, Rochester. Bids Sept. 13. CD 9/6.

† Manchester Sand & Gravel & Cement Co. Inc., Pine Hill St., Hooksett, N. H., LB $591,641, est. $850,000-$959,000, airfield pavements, roads, parking areas and utilities, Grenier Air Force Base, ENG-19-616-56-41. MANCHESTER, N. H. U. S. Eng., 150 Causeway St., Boston, Mass. Whitman & Howard, Inc., 89 Broad St., Boston, Mass., engrs. Bids Sept. 13. CD 8/27.

BUILDINGS—LB & CA

J. G. Roy & Sons Co., 21 Silver St., Springfield, Mass., LB $496,861. ELEMENTARY SCHOOL, South St., AGAWAM, MASS. Town Elementary School Bldg. Comm., 200 Main St., Agawam, Mass. Bids Sept. 7. CD 8/28.

▲ A & A Allen Constr. Co., Inc., 330 Rutherford Ave., Charlestown, Mass. CA Approx. $1,500,000, mechanical off-street GARAGE, Hayward Place, Harrison Ave. Exten. and Norfolk Place, BOSTON, MASS. City, Real Property Bd., City Hall Annex, Boston, Mass. William Nelson Jacobs Assoc., Inc., 316 Stuart St., Boston, Mass., archt. CD 8/27, under LB.

▲ Code Realty, Inc., 31 Milk St., Boston, Mass. CA $2,400,000, construct and finance leasing public PARKING FACILITY, Hayward Place, Harrison Ave., Norfolk Place, BOSTON, MASS. City, Real Property Bd., City Hall Annex, Boston, Mass. Bids Aug. 23. CD 7/19.

J. L. Marshall & Sons, Inc., 560 York Ave., Pawtucket, R. I., LB $660,737, est. $650,000. JUNIOR HIGH SCHOOL, DUDLEY, MASS. Town School Dpt., Dudley, Mass. Bids Sept. 7. CD 8/24.

Brick & Concrete Constr. Corp., 501 High St., Dedham, Mass. LB $509,000, est. $515,000. Franklin SCHOOL, addn., alterations, LEXINGTON, MASS. Town, Franklin School addn., Bldg. Comm., c/o Supt. Schools, 1475 Mass. Ave., Lexington, Mass. Bids Sept. 11. CD 8/22.

Singleton Constr. Corp., Pleasantville Ave., Taunsboro, Mass. LB $389,800. PAROCHIAL SCHOOL and CENTER, Worthen St. and Broadway, LOWELL, MASS. Hellenic Orthodox Church, Holy Trinity, Lewis St., Lowell, Mass. Perley F. Gilbert & Assoc., Inc., Sun Bldg., Lowell, Mass., archt. CD 8/21/53.

▲ Sciaba & Co., Inc., 86 Shawmut Ave., Boston, Mass. LB $1,284,400. William F. Pollard JUNIOR HIGH SCHOOL, NEEDHAM, MASS. Town, Supt. Schools, 1330 Highland Ave., Needham, Mass. Bids Sept. 13. CD 8/15.

Lorello & Nascarato, Inc., 3 E. Main St., Mystick, Conn. CA $641,500. JUNIOR-SENIOR HIGH SCHOOL and existing bldg. alterations, Sam Tooker Farm, OLD LYME, CONN. Town Bd. Educ., Town Hall, Old Lyme, Conn. Bids Aug. 21. CD 8/28, under LB.

MIDDLE ATLANTIC

BUILDINGS—BA

Md., Towson—SCHOOL—BA 10/2—Baltimore Co. Bd. Educ., Aigburth Rd., 1 story, brick, steel, concrete Linwood Elementary School, Baltimore. $600,000. Plans deposit $40. Wrenn, Lewis & Jencks, 113 W. Mulberry St., Baltimore, Zone 1, archts. CD 3/30/55.

▲ N. Y., New York—HOUSING—BA 10/2—New York City Housing Auth., 299 Broadway, Zone 7, (1) foundations and appurtenances (2) general constr. (3) foundations and general constr. (4) heating and ventilating (5) electric work (6) plumbing; and furnish, install elevators for Mill Brook Houses (Proj. No. NYS-65). Sect. II, incl. Bldgs. Nos. 1 to 4 inclusive, incl. Children's Center in Bldg. No. 3 and Community Center in Bldg. No. 4 located in area bounded generally by E. 137 St., St. Anns Ave., E. 135 St. and Brook Ave., Bronx Boro. Plans deposit $75, $25 for elevators. Extended date. CD 8/24.

▲ N. J., Annandale—SCHOOL-EXPANSION—BA 12/4—Bd. Educ., North Hunterdon Regional High School Dist., Annandale, school expansion, $1,500,000. Frederick Elsasser, 2013 Morris Ave., Union, archt. Malcolm Runyon, 20 Fulton St., Newark, engr. CD 4/2.

HEAVY CONSTRUCTION—LB & CA

▲ NEW YORK—John W. Johnson, state supt. Dpt. P. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany.

N. Y.—Horn Constr. Co., Inc., 2174 Hewlett Ave., Merrick, N. Y. LB $689,994. (3 bidders) constr. grade crossing elimination structure and approaches to carry 0.22 mi. sect. of Rte. 110 under Main Line Branch of Long Island R.R. near East Farmingdale in Suffolk Co., Bids Sept. 13.

N. Y.—received no bids Sept. 13, seven-span 840 ft. long welded plate girder bridge and approaches incl. interchange facilities, over Grass River in Massena, connecting Center St. with Parker Ave., involving 1.24 mi., St. Lawrence Co., est. $2,420,000. CD 8/17.

▲ NEW YORK—John W. Johnson, state supt. Dpt. P. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany.

N. Y.—Del Balso Constr. Corp., 500 Zerega Ave., New York, N. Y., LB $5,950,556. (3 bidders) constr. 0.78 mi. depressed portion of new six-lane divided Prospect Expressway between Fifth and Tenth Aves. in Brooklyn, 1.63 mi. of access roads, Kings Co.;

N. Y.—D. W. Winkelman Co., Inc., 205 Harrison St., Syracuse, N. Y. LB $5,721,391. (2 bidders) completion of paving, structural work on State Fair Blvd. and northwest Arterial Connection (Rte. 48) along west side of Lake Onondaga between Hiawatha Blvd. and State Thruway, Onondaga Co.;

N. Y.—Muir-Woodcock, Landscapers, Ridgefield, Conn. LB $207,606. (2 bidder) landscaping work along 7.33 mi. sect. of Major Deegan Expressway in Bronx between 138 St. and city line, Bronx Co.;

N. Y.—H. L. Baughman, Inc., 1240 Jefferson Rd., Rochester, N. Y. LB $1,090,312. (5 bidders) constr. 0.46 mi. portion of four-lane divided Rte. 17, and 0.7 mi. of access roads, near intersection of Tuttle Ave. and E. Water St. in Elmira, Chemung Co.;

N. Y.—John C. Peterson Constr. Corp., 958 Church St., Baldwin, N. Y. LB $207,711. (6 bidders) fencing, screen planting, drainage work and misc. constr. along portions of Northern, Saqtikes, Captree, Southern and Wantagh State Parkways, Nassau and Suffolk Counties;

N. Y.—Draicchio & Caradori Constr. Co., Inc., 3 Lombardy St., Lancaster, N. Y. LB $1,777,641., (1 bidder) relocation, reconstr. 3.99 mi. sect. of Rte. 14A adjacent to and through village of Penn Yan, reconstr. 0.67 mi. sect. of Rte. 54 in village, Yates Co.;

N. Y.—S & S Constr. Co., South Fallsburg, N. Y. LB $169,258. (1 bidder) installing of sanitary sewer line along Main and Bridge Sts. in Margaretville, starting at Fair Street intersection and exten. northeastward along Main St. (Rte. 28) to Bridge St., then southeastward on Bridge St. (Rte. 30) to Delaware River Bridge, distance 0.48 mi. Delaware Co.;

N. Y.—City Constr. Co., 640 Jay St., Utica, N. Y. LB $316,982. (1 bidder) reconstr. Uebler Rd. 2.89 mi. north-south secondary road connecting county roads 180 and 163 in town of Schuyler east of Utica, Herkimer Co.;

N. Y.—received no bids Sept. 13, installing traffic signal system along 5.13 mi. sect. of Massena's South Side arterial route (Rte. 37) from Rte. 56 intersection northeastward to Robinson Tunnel; St. Lawrence Co., est. $73,000. CD 8/17.

D'Amico & Guerriero Inc., 479A Hempstead Turnpike, Elmont, N. Y. LB $215,236. (8 bidders) storm and sanitary sewers in Flatbush Ave. west side from Ave. P to Ave. U and a combined sewer in Flatbush Ave. west side from Flatlands Ave. to Ave. P, BROOKLYN, N. Y. President Brooklyn Boro, Boro Hall, Brooklyn 1, N. Y. Bids Sept. 11. CD 9/5.

▲ General Electric Co., 1 River Rd., Schenectady, N. Y. LB $2,462,933. furnishing, installing main power equip. for Third Avenue sub-station, N. Y. City Transit System, Contr. P-172, BROOKLYN, N. Y. New York City Transit Auth., 370 Jay St., Brooklyn, N. Y. Bids Sept. 7. CD 8/2.

▲ W. J. Barney Corp., 101 Park Ave., New York 17, N. Y. LB $2,658,850. transit shed for Pier No. 11 at Atlantic Basin, Contr. BP-120.002, BROOKLYN, N. Y. Port of New York Auth., 111 Eighth Ave., New York 11, N. Y. Bids Sept. 5. CD 8/2.

Hydro Constr. Corp., 513 Lafayette Ave., Buffalo, N. Y. LB $418,000. control and service center, Cheektowaga, BUFFALO, N. Y. Erie County Water Auth., Ellicott Square Bldg., Buffalo, N. Y. CD 12/20/5.

H. L. Baughman, Inc., Henrietta, N. Y. CA $450,000. expansion of uncompleted sewage treatment plant, HENRIETTA, N. Y. Henrietta Town Bd., Henrietta, N. Y. Bids Sept. 14. CD 9/7.

▲ Tufano Contg. Co., 32-17 Lawrence St., Flushing, N. Y. CA $1,258,587. three parking areas to handle cars in "Terminal City", New York International Airport, IDLEWILD, N. Y. Port of New York Auth., 111 Eighth Ave., New York 11, N. Y. CD 9/5, under LB.

Underpinning & Foundation Co., Inc., 155 E. 44 St., New York 17, N. Y. LB $53,650. (3 bidders) Contr. No. 145C, test piles, in connection with constr. of Harlem River Dr. from W. 145 St. to W. 153 St., NEW YORK, N. Y. President Manhattan Boro, Municipal Bldg., New York 7, N. Y. Bids Sept. 10. CD 9/4.

▲ MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,

Md.—Nello L. Teer Co., Durham, N. C. LB $3,335,199 (3 bidders) surf. 8.431 mi. dual hy., Baltimore Co. Beltway Wilkens Ave. to U. S. 40 incl. 4-span railroad bridge. Contr. "B 635-12-420, Baltimore Co.

Md.—Contee Sand & Gravel Co., Laurel, Md. LB $246,-141. (4 bidders) wid'n., resurf. Main St. Laurel to R. I. Ave. and U.S. 1, 6.61 mi., Contr. P 738-5-320, Prince Georges Co. Bids Sept. 11. CD 8/27.

BUILDINGS—LB & CA

Salvatore Leccese, 106 McNaughton St., Rochester, N. Y. LB $618,481. (8 bidders) general constr. SCHOOL, ALEXANDER, N. Y. Central School Dist., Alexander, N. Y. Bids Sept. 11. CD 9/5.

▲ Nicholas Coblis & Sons, Geneva, N. Y. LB $1,297,-294. imprvs., addns. to several grade and one high SCHOOL, NEWARK, N. Y. Bd. Educ., Newark, N. Y.

John Banas, 1510 Fox Plate, Utica, N. Y., and Robert Williams, RD 1, Trenton Rd., Utica, N. Y. Own Forces. $432,500. 35 HOMES, NORTH UTICA, N. Y.

▲ Ingalls Industries, 620 Fourth Ave. S., Birmingham, N. Y. CA $3,000,000. furnish, erect 7,000 tons structural steel at Indian Point A-Reactor PLANT, PEEKSKILL, N. Y. Consolidated-Edison Co. of New York, Inc., 4 Irving Pl., New York 3, N. Y. CD 3/9/55, under CA.

▲ Abe Shames & Jim Marcone, c/o Irving Hirshman, archt., 230 W. 13 St., New York 3, N. Y. Owner Builds. $1,000,000. INDUSTRIAL CENTER on 26 acre tract on Brush Hollow Rd., to incl. vocational school and Medical Services Bldg., WESTBURY, N. Y. Factories to be occupied by Stanat Mfg. Co., Westbury Electronics and Lane-Murray Corp. CD 3/27.

F. & C. Haerter Co., 257 Hemlock Terrace, Teaneck, N. J., CA $400,000, renovating 3 and 4 floors of east HOSPITAL WING, ENGLEWOOD, N. J. Bd. Trustees Englewood Hospital, Engle St., Englewood, N. J. Lawrence Licht, 19 Knickerbocker Rd., Englewood, N. J., archt. Awarded Sept. 10.

(Continued on page 80)

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily

For additional reports see Construction Daily.

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No "traffic" handling public works of the future will be really modern without provision for "automatic" removal of snow and ice!

Pedestrian, vehicular, or airborne, it doesn't matter . . . the increasing volume and peak load conditions imposed by today's and tomorrow's traffic, demand uninhibited "flow" at *all* times.

So it is that public planners and engineers are turning to steel pipe snow and ice melting systems for such great projects as in the ramp and stairway of the Staten Island Ferry Building, the Indiana Turnpike interchanges, the sidewalks around great new buildings, on bridge floors, airports, congested city street crossings, elevated approaches and ramps.

Steel Pipe is first choice for these installations because its known economy makes investment in "automatic" melting economically practical. Add the advantages of formability, workability, weldability and reliability and you know why steel pipe is the most widely used in the world . . . for snow melting, radiant heating, plumbing, fire sprinkler systems, power, steam and air transmission.

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Even the open stairway of the Staten Island Ferry Building is "snowless" . . . each step-tread concealing one length of 1" steel pipe to melt snow and ice.

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Committee on

STEEL PIPE RESEARCH

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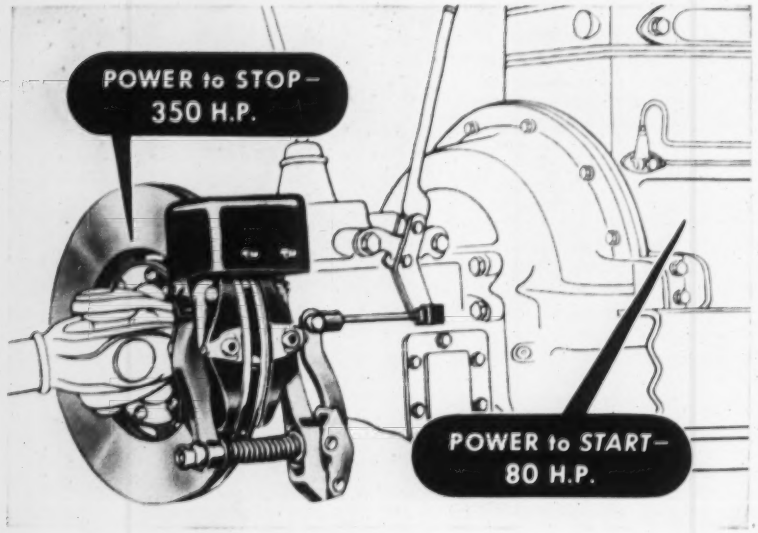
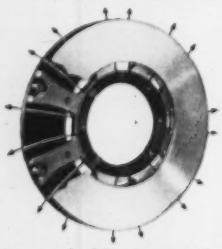
FOR LONG LIFE—EASY SERVICE



Have the surplus braking power emergency service requires

• In terms of horsepower, brakes actually do more work than the engine. For example:



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• The terrific heat generated in braking shortens lining life. TRU-STOP design quickly dissipates this heat. Most of the disc is exposed to the air even during braking. And a jet of cooling air circulates between the disc blades and carries off heat.

Where it takes 80 H.P. to accelerate to 20 miles per hour, 350 H.P. is required to make a safe stop at that speed within required limits.

TRU-STOP Emergency Brakes have the surplus braking power required for emergency service. That is why they are more adequate for use as parking brakes.

TRU-STOP Brakes lower service costs, too. Relining or adjustment is a simple job for any mechanic with ordinary tools. It is not necessary to drop the drive shaft.

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ACCO

TRADE MARK

Automotive and Aircraft Division
AMERICAN CHAIN & CABLE

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2216 South Garfield Ave., Los Angeles 22 • Bridgeport 2, Conn.

(Continued from page 78)

▲ S & Z Construction Co., Rt. 9 and Hy. 19, New Brunswick, N. J. Owner Builds. $1,400,000. 95 HOMES, Green Grove Rd., Neptune-by-the-Sea, NEPTUNE, N. J. J. W. Hilton, 28 Oak Crest Rd., West Orange, N. J., archt.

▲ Gushin & Okin Associates, 210 Haverford St., New Brunswick, N. J. Owner Builds. $3,000,000. 176 HOUSES, to be known as "Lynn Oaks", New Dover Rd. Colonia Section of NEW BRUNSWICK, N. J. Gerber & Camapania, 11 Commerce St., Newark, N. J., archts.

▲ Joseph Karp, 45 Harding Dr., East Orange, N. J., Owner Builds. $1,138,830. 77 HOMES near Woodbridge Circle to be known as "Hearthstone Homes", WOODBRIDGE, N. J. Erwin Gerber, 11 Commerce St., Newark, N. J., archt.

▲ Marshall & Raymond Sachs, c/o Thomas Carr, archt., 479 Brace Ave., Perth Amboy, N. J. Owner Builds. $2,500,000. 128 HOUSES in Jordan Woods Section, WOODBRIDGE, N. J.

▲ Williard, Inc., Germantown and Sedgley Ave., Phila., Pa. LB $1,212,000. heating, ventilation and air-conditioning phases for Commonwealth OFFICE, PHILA., PA. General State Auth., 18 and Herr Sts., Harrisburg, Pa. Bids Sept. 12. CD 8/28.

Atlas Contractors of Md., 2629 E. Cold Spring Lane, Baltimore 14, Md. LB $517,977, est. $470,000. (2 bidders) brick, concrete, steel Clyburn HOME (for children), 2202 Cold Spring Lane, BALTIMORE, MD. City Bureau Bldg. Constr., 410 Municipal Bldg., Baltimore 2, Md. Bids Sept. 13. CD 9/5.

▲ Hageman & Harris, Inc., 2415 Virginia Ave. N.W., Wash., D. C., LB $2,445,175, est. $2,000,000 (6 bidders) HEADQUARTERS BLDG., Wisconsin Ave. N.W. WASH., D. C. Equitable Life Insurance Co., 816 14 St. N.W., Wash., D. C. Bids Sept 13 CD 8/30.

SOUTH

BUILDINGS—BA

▲ La., New Orleans—LIBRARY—BA 10/16—City Purch. Division, 302 City Hall, 2 story, 135,000 sq. ft. glass, concrete downtown library, Loyola and Tulane Aves. $2,200,000. Plans deposit $150. Curtis & Davis, 338 Baronne St., and Goldstein, Parham & Labouisse, 811 American Bank Bldg., archts. CD 5/13.

▲ Ky., Fort Knox—HOUSING—BA 11/8—U. S. Eng., 830 W. Broadway, Louisville, construct and finance 2,042 family housing units, (Capehart), ENG-15-024-56-87. $30,000,000. Warren & Van Praag & Assoc., 253 S. Park St., Decatur, Ill., archts. CD 8/20.

Ga., Americus—HOUSING—BA 2/5—Americus Housing Auth., 40 housing units. $400,000. Abreu & Robeson, Inc., 141 Walton St., Atlanta, archts. CD 4/15/53.

HEAVY CONSTRUCTION—LB & CA

▲ VIRGINIA—Richmond-Petersburg Turnpike Auth., 2015 S. Main St., Richmond.

T. A. Loving & Co., P. O. Box 1291, Goldsboro, N. C. CA $1,150,870. Contr. B-2-SUB. Sect. B, substructure, north for the James River, Bridge, City of Richmond. Bids Aug. 28. CD 9/4, under LB.

† Reid & Hope, P. O. Box 828, Suffolk, Va. LB $302,477. (13 bidders) chapel, Naval Air Station, NOr 91350, Spec. 48280, OCEANA, VA. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk 11, Va. Bids Sept. 11. CD 8/15.

▲† Arundel Corp., Pier 2 Pratt St., Baltimore, Md., L. E. Dixon Co., 409 S. California St., San Gabriel, Calif., and Hunkin-Conkey Constr. Co., 1740 E. 12 St., Cleveland, O., LB $16,015,785 dam, Sutton Reservoir Proj., Elk River, Serial No. CIVENG-46-022-57-4, WEST VIRGINIA. U. S. Eng., 237 Fourth Ave., Huntington, W. Va. Bids Sept. 13. CD 8/6.

NORTH CAROLINA—State Hy. & P. Wks. Comn., Raleigh.

Wannamaker & Wells, Inc., Box 542, Orangeburg, S. C. CA $701,689, grading and structure 0.642 mi. US 701. Proj. No. 3083. SF-244 (6), Bladen Co. Bids Aug. 28, awarded Sept. 12. CD 9/4, under LB.

▲ Rea Constr. Co., Pineville Rd., Charlotte, N. C. CA $3,575,000. Moskins Filtration plant, CHARLOTTE, N. C., City, City Hall, Charlotte, N. C. Bids Aug. 31. CD 9/14, under LB.

▲† McWilliams Dredging Co., Box 584, New Orleans, La. LB $2,316,860 (4 bidders) Old River control, outflow channel dredging consist s of 13,400,000 cu. yd., Concordia Parish, Inc. 57-31, LOUISIANA, U. S. Eng., foot of Prytania St., New Orleans, La. Bids Sept. 5. CD 8/27.

▲ Clark Constr. Co., 1919 Parrish Ave., Owensboro, Ky. CA $1,004,022 (4 bidders) Contr. B, 3 pumping stations, 1,800, 2,400 and 900 gals. per minute, OWENSBORO KY. City, Owensboro, Ky. Bids Aug. 21, awarded Sept. 11. Grand total $2,385,107. CD 8/27, under LB.

Markwell & Hartz, P. O. Box 6225, Memphis, Tenn. CA $754,405 (6 bidders) Alt. A, Contr. A, sewage treatment plant 7.5 m.g.d. (Owensboro, Ky.);

Roy Ryan Constr. Co., 800 E. Michigan Ave., Evansville, Ind. CA $626,680 (4 bidders) Contr. C, sewer lines, (Owensboro, Ky.).

† Office of Contracting Officer, Patrick Air Force Base, Cocoa, Fla., rejected bids Aug. 9, relocation, modification of Ramjet facility, Bldg. 1345, Cape Canaveral Auxiliary Air Force Base, CAPE CANAVERAL AUXILIARY AIR FORCE BASE, FLA. CD 8/2.

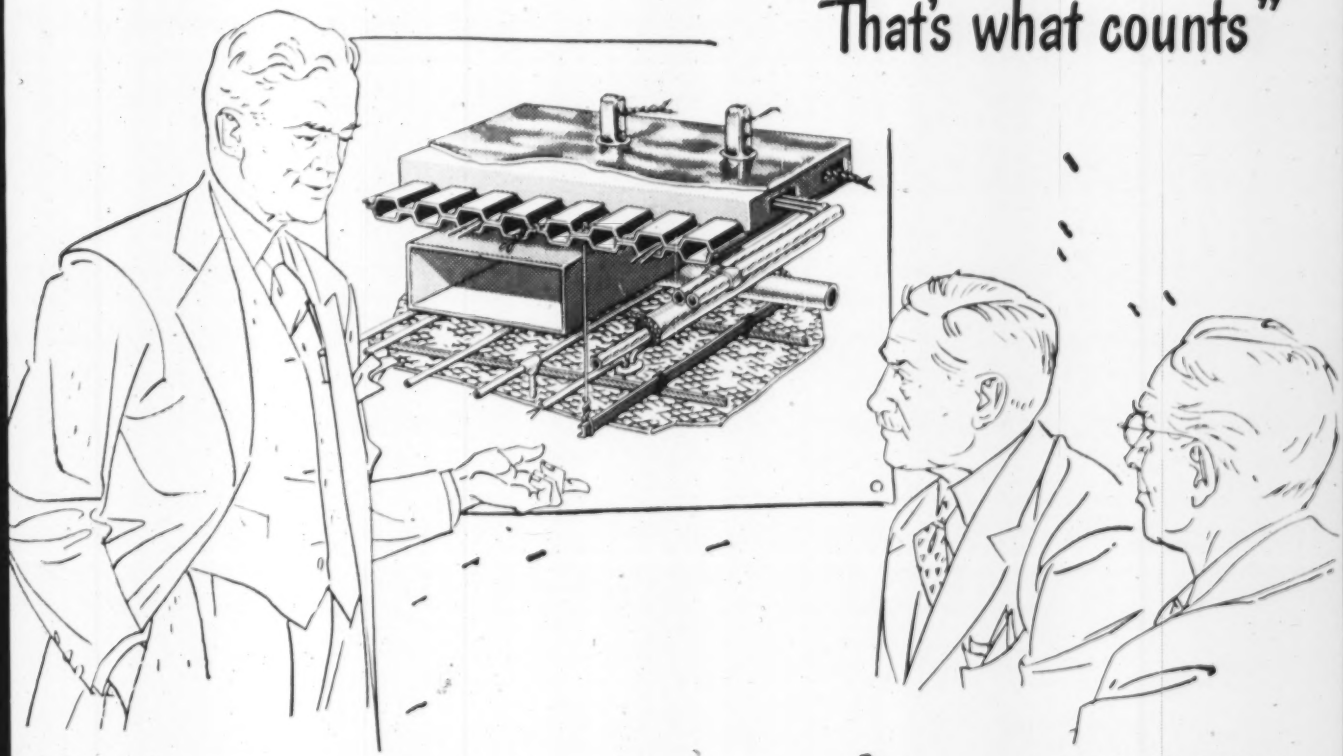
BUILDINGS—LB & CA

Virginia Engineering Co., Inc., 80 29th St., Newport News, Va. LB $545,500. SERVICE BLDG., alterа-

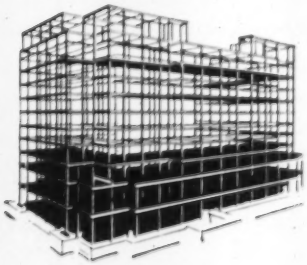
(Continued on page 82)

ASKED HOW SOON THE BUILDING COULD START, THE CONTRACTOR SAID,

"Steel construction gives a quicker finish date, That's what counts"



"Even if structural steel is tight, you have to allow time for demolition and excavation. By then the steel is ready. Todays finest buildings are being built with steel Q-Floors. They are the load-carrying members. The use of Q-Floors alone reduces construction time 20 to 30%.

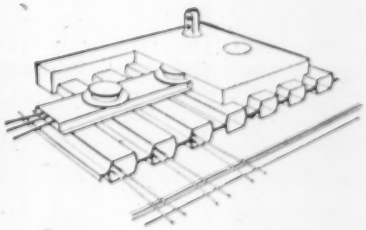


"You get a much quicker completion date. That's what decides how soon you can begin making money from your investment. Q-Floors go in fast —two men can lay 32 sq. ft. in half a minute. And construction is dry; no forms, falsework, or wet materials to hold back work. No fire hazard. Dry construction accounts for the 20 to 30% saving in time.

"Cost? Q-Floors cost less than the carpet to cover them! At most, the floor is always a small fraction of total cost, and yet the floors are what a building is for.

"You're making an investment for forty or fifty years. Q-Floors protect your investment over the decades against electrical obsolescence.

"Look at this picture of a section through the floor of a modern Q-Floor building. Suspended ceiling and all the building's mechanical equipment arteries are visualized in a condensed form. Steel Q-Floor cells are crossed over by headers. These carry wires for every



conceivable electrical service. An outlet can be established on every six-inch area, exactly where needed. The outlet calls for only a small hole. Takes actually a few minutes. No trench to dig. No muss or fuss. The entire building is protected against electrical obsolescence. Any number of new business machines can be introduced. Tenants can have as many changes, as fast as they want."

Write for the complete story—

Q-Floor*

*The original cellular steel floor . . since 1930 over 12,500 installations

H. H. Robertson Company

2420 Farmers Bank Building • Pittsburgh 22, Pennsylvania

In England—Robertson Thain Ltd., Ellesmere Port, Cheshire
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NAME _____ TITLE _____

COMPANY _____

ADDRESS _____

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another
ENGINEERING ACHIEVEMENT
by WEST VIRGINIA
Track Specialists

West Virginia's track engineers called on 33 years of experience in designing the extra heavy duty movable siding used in constructing the Delaware River Aquaduct.

This 210 foot siding is designed to slide smoothly over the main track, following the work at the tunnel's face. Maneuverability is coupled with the extreme strength needed to withstand the weight of thousands of tons of muck hauled from the face daily. The specially designed narrow bypass is also a West Virginia achievement.

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throughout the world of TRACK

In this, and other special installations, West Virginia engineers were asked to work with the contractor's engineers prior to the contract award. This blend of practical experience with engineering experience has met the specific, exacting requirements needed for industrial track installations throughout the world.

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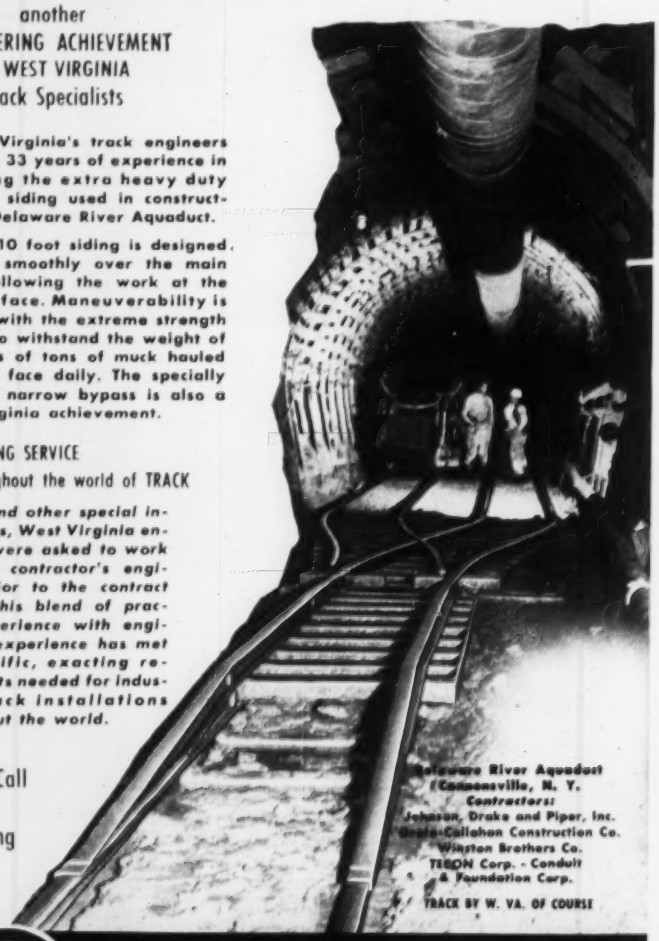

Delaware River Aqueduct
(Catonsville, N. Y.
Contractors:
Johnson, Drake and Piper, Inc.
Groves-Callahan Construction Co.
Winston Brothers Co.
TECON Corp. - Conduit
& Foundation Corp.

TRACK BY W. VA. OF COURSE

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(Continued from page 80)

tions, addns., Princess Anne Rd. and Buzzards Neck Rd., NORFOLK, VA. Sears Roebuck & Co., 201 W. 21 St., Norfolk, Va. F. E. Davidson, 675 Ponce de Leon Ave., Atlanta 6, Ga., archt.

▲ Southeastern Constr. Co., 1600 McCorkle Ave., Charleston, W. Va., CA $2,180,000, OPERATING CENTER and other structures on 60-acre tract on Kanawha River near ST. ALBANY, W. VA. New York Life Insurance Co., United Fuel Gas Co., lessee, 1033 Quarrier St., Charleston, W. Va. Bids Sept. 6. CD 8/28.

▲ J. A. Jones Constr. Co., 209 W. 4 St., Charlotte, N. C., CA $16,016,541, construct and finance 1,216 HOUSING UNITS (Capehart), FORT BRAGG, N. C. U. S. Eng., 308 Custom house, Wilmington, N. C. CD 8/2, under LB.

▲ Jones Bros. & Co., Wilson, N. C., LB $1,658,900 four SCHOOLS: WILSON N. C. City Wilson, N. C. Bids Sept. 6. CD 8/6.

Richard S. Flink Constr. Co., 1125 North Shore Dr., Normandy Isle, Miami Beach, Fla., CA $400,000 Base Bid, MOTEL addns., alterations, S. Dixie Hy. and Alhambra Circle, CORAL GABLES, FLA. University Courts Motel, c/o Houston-Ferguson, archts., 4035 Ponce de Leon Blvd., Coral Gables, Fla. Bids Aug. 15. CD 8/22, under LB.

▲ Cole Building Corp., 924 Lincoln Rd., Miami Beach, Fla., Owner Builds, $1,000,000, 100-unit MOTEL between 30 and 31 Sts., on Biscayne Blvd. MIAMI, FLA. Melvin Grossman, 311 Lincoln Rd., Miami Beach, Fla., archt.

Lionel Favret, 937 Gravier St., New Orleans, La., LB $487,700, 3 story, brick, reinf.-con. 30,600 sq. ft. ELEMENTARY SCHOOL, 3 story, reinf.-con., brick CONVENT, NEW ORLEANS, LA. Congregation of St. Dominic's R. C. Church, Memphis and Harrison Aves., New Orleans, La. Bids Sept. 7. CD 8/24.

Tudor Constr. Co., Box 1232, Alexandria, La., CA $541,262 (4 bidders) 3 story boys' DORMITORY, 3 story girls' DORMITORY addn., PINEVILLE, LA. Louisiana College, Dr. G. Earl Guinn, Pineville, La. Bids Sept. 5. CD 8/3.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

† Illinois—BA 10/29—U. S. Eng., 420 Locust St., St. Louis 2, Mo.: constr. uncompleted section of dam for Devil's Kitchen Dam Proj., Williamson Co., Crab Orchard Federal Wild Life Refuge area, CIVENG-23-065-57-25.

BUILDINGS—BA

▲ Ill., Chicago—HOSPITAL—BA 10/2—Wesley Memorial Hospital, 250 E. Superior St., superstructure 10 story dormitory and 5 story hospital addn., brick, concrete U shaped annex, $5,500,000. Fugard, Burt, Wilkinson & Orth, 520 N. Michigan Ave., archt.

Ind., Terre Haute—VOCATIONAL-EDUCATIONAL—BA 10/2—State Teachers College Rd., Indiana State Teachers College, Terre Haute, remodeling vocational-educational bldg., $450,000. Yeager Architects, Inc., 822 Ohio St., archt.

Ind., Rochester—SCHOOL—BA 10/3—Rochester School Twp., Bldg. Corp., State Rd., school-grade, 1½ mi. west. Plans deposit $25. Hamilton & Graham, 411 Western Reserve Bldg., Muncie, archts. CD 7/26/54.

Mich., East Detroit—SCHOOL—BA 10/8—Bd. Educ., Floyd H. Hanson, secy., 15500 East Nine Mile Rd., East Detroit. High School addn. Plans deposit $75, general constr., $35, mechanical work, $35 electrical work, O'Dell, Hewlett & Luckenbach, 950 N. Hunter Blvd., Birmingham, archts. CD 10/31.

BUILDINGS—SLC

Ind., East Chicago—DIAL EXCHANGE—Illinois Bell Telephone Co., 212 W. Washington St., Chicago, Ill., soon lets contract 2 story, bsmnt., concrete block dial exchange bldg., Chicago and Melville Aves., $500,000. Holabird & Root & Burgee, 180 N. Wabash Ave., Chicago, archts.

HEAVY CONSTRUCTION—LB & CA

Vanguard Constr. Corp., 369 Lexington Ave., New York, N. Y., LB $837,408 (3 bidders) Sect. A, addn. to house rapid sand filters, YOUNGSTOWN, O. Mahoning Valley Sanitary Dist., P. O. Box 248, Youngstown 1, O. Parsons, Brinckerhoff, Hall & Macdonald, 51 Broadway, New York 6, N. Y., engrs. Bids Sept. 11. CD 8/2.

▲ INDIANA—State Hy. Comn., State House Annex, Indianapolis.

Ind.—Smith & Johnson Co., 1749 Kentucky Ave., Indianapolis, Ind., LB $141,008, est. $154,821, reinf.-con. girder type structure over Wagner Ditch and continuous reinf.-con. slab type bridge over Little Sugar Creek, U.S. 52, Hancock Co.; LB $224,783, est. $287,006, deck plate girder subway structure under N. Y. C. R.R. on SR 62, Jeffersonville, LB $803,456, est. $919,999, bridge over Fall Creek and culvert over Fall Creek Ditch, S.R. 37, Marion Co.; LB $166,933, est. $141,893, reinf.-con. slab bridge on SR 9 over east fork of Lewis Creek; LB $330,423, est. $353,998, reinf.-con. arch bridge over Plum Creek, steel beam bridge, continuous steel beam bridge on SR 350 in Ripley Co.

Ind.—Rieth-Riley Constr. Co., Goshen, Ind., LB $183,149, est. $218,443, three reinf.-con. arch-type bridges over Greasy Creek, S.R. 350.

Ind.—Ryan Constr. Co., 800 E. Michigan St., Evansville, Ind., LB $188,273, est. $258,388, 5-span reinf.-con. girder and steel beam overhead bridge, S.R. 62, near Evansville.

(Continued on page 84)

CHECK LIST of how a modern truck-crane speeds schedules

Here's a line of advance-design machines that incorporates so many work-speeding advantages that owners have completely revised their existing production standards. In addition to the list of features below, these truck-cranes offer as standard equipment, true power hydraulic controls—Speed-o-Matic, that make the operator's job easy, safe. He gets fast, positive response . . . perfect "feel" for speed with accuracy. Small wonder there's a big swing to Link-Belt Speeder.

Check all these advantages

- ☐ **LOWERS LOAD UNDER POWER** on main hoist line and jib whip line—result is greater precision and safety. (Reversing clutches are available for either or both main drums).
- ☐ **SELDOM STOPS FOR CLUTCH ADJUSTMENT**—Interchangeable, hydraulically-actuated clutches automatically compensate for heat and normal lining wear.
- ☐ **OFFERS GREATER NET HORSEPOWER**—This adds up to greater line pulls and work capacity. Torque converter units available for all models.
- ☐ **SPEEDS PILEDRIVING OPERATIONS**—All Link-Belt Speeder truck-cranes can be furnished with a third operating drum.
- ☐ **RAISES AND LOWERS BOOM UNDER POWER**—Independent Rapid Boomhoist utilizes Speed-o-Matic clutches for power-raising and power-lowering.
- ☐ **HANDLES HEAVY LOADS AT EXTREME RADII**—Patented retractable high gantry, which can be raised or lowered under power, minimizes stresses on boom and boomhoist cable.
- ☐ **SIMPLIFIES AND SPEEDS CONVERSION**—A Link-Belt Speeder is designed for fast, in-the-field convertibility to any standard attachment. Removable rear outriggers available, plus split laggings for easy removal.
- ☐ **SWINGS SMOOTHLY, QUICKLY**—Conical, hook-type rollers on anti-friction bearings permits "friction-free" swing. Hydraulically actuated swing brake available—especially valuable for long boom operations.
- ☐ **SPEEDS COUNTERWEIGHT ADDITION OR REMOVAL**—Speed-o-Matic hydraulic jacks do the job on the larger models.

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Builders of a complete line of shovel-cranes . . . with exclusive Speed-o-Matic power hydraulic controls

HC-98 Zephyrcrane with 80' boom and 20' jib works quickly, spots loads gently, accurately. Operator has clear, up-front visibility.

It's time to compare . . . with LINK-BELT SPEEDER

Five models 12½ to 35-ton capacities with true power-hydraulic control

HC-58	HC-68	HC-88	HC-98	HC-108
12½-ton	17½-ton Remote control available.	25-ton	30-ton	35-ton

(Continued from page 82)

Ind.—**G. H. Allen**, Vincennes, Ind., LB **$91,296**, est. $98,719, continuous steel beam bridge on SR 63 over Turman Creek;

Ind.—**Kahl-Mahan Constr. Co.**, Liberty, Ind., LB **$156,523**, est. $181,941, rein.-con. arch type bridge on SR 44 over Hanna Creek;

Ind.—**Wilbur C. Scheirer Co.**, Frankfort, Ind., LB **$109,188**, est. $109,091, bridge over south fork of Wildcat Creek, Tippecanoe Co. Bids Sept. 11. CD 8/23.

† **Lee Constr. Co., Inc.**, 127 N. Dearborn St., Chicago, Ill., CA **$882,564**, misc. building and structures at Site C-03D, Cook Co., Serial No. ENG-11-032-57-10, ILLINOIS U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill. Bids Aug. 14. CD 8/22, under LB.

▲ **Kenny Constr. Co.**, 3220 Oakton St., Skokie, Ill., LB **$4,486,050**, Contract 4-B-2, Calumet Skyway Toll Road, comp. structure except structural steel bridges over 87 and Kinston Sts.; drainage, paving, toll booths, rest. streets, sewers, north side 87 to Colfax Sts., CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids Sept. 13. CD 8/23;
J. M. Corbett Co., 2500 S. Corbett St., Chicago, Ill., LB **$3,618,038**, Contract 4-A-2, Calumet Skyway Toll Road, structures except structural steel, bridges over Elliott Ave., 83 St., Jeffery Ave., 85 and 86 Sts., drainage, paving (Chicago, Ill.).

▲ **Crowley Sheppard Asphalt Co.**, Box 144, Maywood, Ill., CA, **$326,797**, bit. paving Western Ave., Sec. 055-2024, near CHICAGO, ILL. Cook Co., County Bldg., Chicago, Ill. Grand total $1,261,296. CD 2/23.
Arcole Midwest Corp., 3225 Main St., Evanston, Ill., CA, **$312,486**, bit. paving Western Ave., Sec. 055-3336, near here (Chicago, Ill.);
Rock Road Constr. Co., 5915 N. Rogers Ave., Chicago, Ill., CA, **$303,804**, bit. paving Western Ave., Sec. 055-2428, near here (Chicago, Ill.);
J. A. Ross & Co., 3147 N. Cicero Ave., Chicago, Ill., CA, **$318,209**, bit. paving Western Ave., Sec. 055-2932, near here (Chicago, Ill.).

States Improvement Co., Inc., 1 N. La Salle St., Chicago 2, Ill., CA, **$232,962**, 2 single span plate girder bridge, 25 Ave. at Roosevelt and I. H. B. R.R., Sec. 020-0606, Broadview, CHICAGO, ILL. Cook Co., County Bldg., Chicago, Ill. CD 2/23.

▲ **John C. Tully Co.**, 33 N. La Salle St., Chicago, Ill., LB **$1,294,399**, auxiliary outlet sewers Kostner Ave. System, Bloomingdale-Sayre, CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids Sept. 7. CD 8/16.

▲ **MICHIGAN**—State Hy. Dpt., Stevens T. Mason Bldg., Lansing,
Mich.—**Brown Brothers**, 3245 W. St. Joseph St., Lansing, Mich. CA **$670,550**, est. $660,000, rein.-con., steel bridge on relocation of M-21 over Grand River, F 82 of 41-1-4 C2-R (F 185 14), Kent Co.;
Mich.—**Louis Garavaglia**, 24240 Mound Rd., Center Line, Mich. CA **$514,571**, est. $570,000, rein.-con., steel bridge on relocation of US-16 over C. & O. RR., IN X1 of 63-13-4 C1-RN (IN 04-4), Oakland Co. CD 8/31, under LB.

MICHIGAN—State Hy. Dpt., Stevens T. Mason Bldg., Lansing,
Sargent Constr. Co., 2840 Bay Rd., Saginaw, Mich. CA **$581,039**, est. $650,000. c. conc. 3.49 mi., 22 ft. widen. on M-15, F 09071 C1-R (SP 9-11) (F 259 12), Bay Co. CD 9/12, under LB.

J. C. Sachs Contractor, 724 Lafayette Bldg., Detroit 26, Mich. CA **$82,094** Groups 56-4A and 56-5A grading, paving, PW-2730F, PW-2731F, PW-2772F, PW-2773F, PW-2774F, PW-2775F, PW-2778WF, PW-2781F, PW-2782W, DETROIT, MICH. City, M. F. Wagnitz, city engr., 528 City County Bldg., Detroit 26, Mich. Bids Aug. 14, awarded Aug. 28. CD 8/6.

Owen Ames & Kimball Co., 38 Pearl St. N. W., Grand Rapids, Mich. CA **$524,895** sewage treatment plant, Contr. 15, GRAND RAPIDS, MICH. City, Donald M. Oakes, mgr., City Hall, Grand Rapids, Mich. CD 9/6, under LB.

BUILDINGS—LB & CA

▲ **H. G. Christiman Constr. Co.**, 850 Fellows St., South Bend, Ind., LB **$2,207,604**, 2 story HIGH SCHOOL, E. Jefferson and Bittersweet Rds., MISHAWAKA, IND. Penn Twp. School, 117 Lincolnway E., Mishawaka, Ind. Bids Aug. 22.

LaSalle Constr. Co., 343 S. Dearborn St., Chicago, Ill., CA, **$543,000**, OFFICES addn., CHICAGO, ILL. Borden Co., Tripp and Barry Sts., Chicago, Ill. Rodde Anderson & Novak, 6618 W. Diversey St., Chicago, Ill., archts. Awarded Sept. 1.

▲ **Midway-LaSalle Building Corp.**, c/o 2217 8 St., Peru, Ill., CA, Est. **$2,000,000**, SHOPPING CENTER, incl. multi-floor department store, 80-acre tract State Rte. 51 north of LASALLE, ILL. Midway Plaza Shopping Center, 2217 8 St., Peru, Ill. George L. Bollenbacker, 36 S. State St., Chicago, Ill., archt. CD 8/14.

Van Etten Bros. Builders, 11024 S. Michigan Ave., Chicago, Ill., CA **$300,000** 1 story, brick, 20,000 sq. ft. BOILER HOUSE, 2531 W. 48 St., CHICAGO, ILL. Chicago Tube & Iron Co., 2531 W. 48 St., Chicago, Ill. CD 7-14/52.

R. C. Wieboldt Co., 1515 Church St., Evanston, Ill., LB **$513,700** 3 story NURSES HOME addn., EVANSTON, ILL. Cradle Society, 2049 Ridge Ave., Evanston, Ill. Bids Sept. 4. CD 8/24.

▲ **Foster Wheeler Corp.**, 165 Broadway, New York, N. Y., CA **$10,000,000** synthetic ammonia PLANT, LOCKPORT, ILL. Texas Co., 332 S. Michigan Ave., Chicago, Ill.

Kelso Constr. Co., 1710 W. Lawrence Ave., Chicago, Ill., LB **$462,317**, 1 story, brick, VILLAGE HALL and LIBRARY, 10240 Roosevelt Rd., WESTCHESTER, ILL. Village, Village Hall, Westchester, Ill. Bids Aug. 27. CD 8/17.

Woerfel Corp., 5345 N. Hopkins St., Milwaukee, Wis., CA, Est. **$563,000**, 1 story, 125x358 ft., concrete, steel, concrete block welding and fabricating PLANT, WEST MILWAUKEE, WIS. Harnischfeger Corp., 4400 N. National Ave., Milwaukee, Wis.

▲ **Bert L. Smokler & Co.**, 1200 Penobscot Bldg., Detroit, Mich. Owner Builds. **$1,200,000** 70 brick ranch HOUSES, Mount Royal, Commerce Lake, BLOOMFIELD, MICH.

H. C. Merriman & Son, Orland, Ind., CA **$344,750** general constr. ELEMENTARY SCHOOL addn., GYMNASIUM, CONSTANTINE, MICH. Bd. Educ., Constantine, Mich. Guida A. Binda & Assoc., 231 Capitol Ave., Battle Creek, Mich., archts.

▲ **Sullivan-Smith, Inc.**, 22963 Outer Dr., Dearborn, Mich. Owner Builds. **$3,200,000** Warren Valley Subdivision 190 brick ranch HOMES, Warren Ave. sect., DEARBORN, MICH.

Uniland Co., 2560 Second St., Detroit, Mich. Owner Builds. **$490,000**. APARTMENT, 10 units, 58 rooms, DETROIT, MICH.

▲ **Thompson-Brown Co.**, 19426 Grand River, Detroit 23, Mich. Owner Builds. **$3,900,000** Kendallwood Subdivision, 220 brick HOMES, FARMINGTON, MICH.

Sorensen-Gross Constr. Co., Flint 1, Mich., CA **$627,337** Genesee County JUVENILE FACILITY, detention unit, FLINT, MICH. Bd. Supervs. Genesee Co., Joseph Galliver, aud., County Court House, Flint, Mich. Bids Aug. 20. CD 8/6.

▲ **Hallmark Builders**, 18109 James Couzens Hy., Detroit, Mich. CA Est. **$1,125,000**. Lotus Lake Subdivision, 80 brick HOMES, WATERFORD, MICH. Rose-Hills Realty Co., 14601 Seven Mile Rd., Detroit, Mich.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

▲ **Colo., Boulder**—BA 10/1—City, City Hall, sewage treatment plant and outfall sewer. $1,000,000. Black & Veatch, 4706 Broadway, Kansas City, Mo., engrs. CD 11/15/55.

† **South Dakota**—BA On Or About 11/14—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., furnish seven 128,500 hp. Francis type hydraulic turbines complete with spiral case, spiral case exten., draft tube liner, pit liner and appurtenant parts, for Oahe Reservoir Proj., near Pierre; CIVENG-25-066-57-29. CD 5/25/44

BUILDINGS—BA

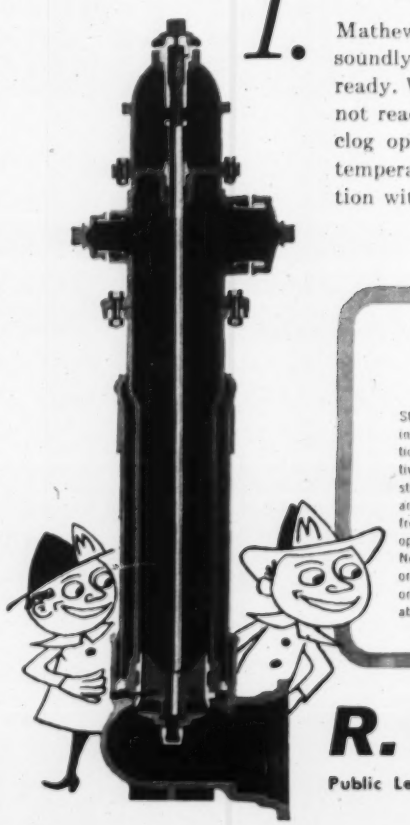
Tex., Fort Worth—HEALTH CENTER—BA 10/4—City, c/o Dr. Jack Garrison, mayor, and Gus Brown, county judge, City Hall, masonry, concrete, steel health center, Camp Bowie at Arch Adams St. $720,000. Plans deposit $25. Extended date. Herman G. Cox, 415 N. P. Anderson Bldg., archt. CD 9/12.

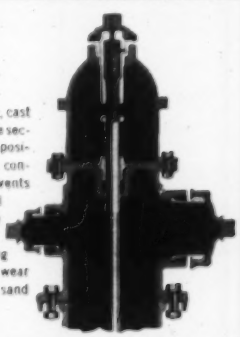
SPECIFY MATHEWS FOR

You need ask two questions

1. **Will they be ready for instant use in an emergency?**

Mathews Hydrants are so simply and soundly constructed that they are always ready. Water, ice and sandy deposits cannot reach key parts to rust or freeze, or clog operation. In any weather and all temperatures, Mathews Hydrants function with a minimum of maintenance.





Stuffing box plate, cast integral with nozzle section, provides a positively leakproof construction. It prevents any water or sand from reaching the operating thread. No rusting, freezing or clogging. No wear on thread through sand abrasion.

R. D. WOOD

Public Ledger Building, Independence Square
Philadelphia 5, Pa.

Tex., Denison—SCHOOL IMPRVS.—BA 10/9—Denison Independent School Dist., Denison, school imprvs., incl. Lamar, Sam Houston and Terrell Schools addns.; new elementary school and fieldhouse, $500,000. Plans deposit $25. Wilson, Patterson & Assocs., 601 Bailey St., Fort Worth, archts. CD 9/18, under LB.

▲ Colo., Colorado Springs—HOSPITAL—BA 10/31—Glöckner-Penrose Hospital, 2200 N. Tejon St., 12 story, 300-bed Glöckner-Penrose Hospital. $5,500,000. Fisher & Fisher, Denver National Bldg., Denver, engrs. CD 7/5/55.

BUILDINGS—SLC

▲ Colo., Denver—BANK—Federal Reserve Bank of Kansas City, 1111 17 St., soon lets contract, 3 story, bsmnt., 68x125 ft. bank addn. $1,500,000. T. H. Buell & Co., 730 14 St., engrs. CD 8/7.

HEAVY CONSTRUCTION—LB & CA

MINNESOTA—State Hy. Dpt., 1246 University Ave., St. Paul,

W. Hodgman & Sons, Fairmont, Minn., LB $278,862. (6 bidders); b. conc. 3.8 mi. between Newton Ave. in Albert Lea and 3 mi. east, Freeborn and Steele Counties. Bids Aug. 17. CD 8/7.

Phelps-Drake Co., Inc., 1415 S.E. Eighth St., Minneapolis, Minn., CA $91,800 (1 bidder); sanitary sewer, appurtenances, EDINA (P.O. MINNEAPOLIS) MINN. Village, Gretchen S. Alden, clk., Edina, Minn. Bids Sept. 10. CD 8/23.

IOWA—State Hy. Comn., Ames,

Iowa—Booth & Olson, Inc., 529 Insurance Exchange Bldg., Sioux City, Iowa, LB $232,871, c. conc. 1.225 mi. FN-38, Plymouth Co.;

Iowa—Gus Ostermann & Sons, Ocheyedan, Iowa, LB $176,148, grading 9.716 mi., Special F-984 (2) Chickasaw Co.;

Iowa—Scothorn Constr. Co., Cherokee, and Linnon-Gibson Constr. Co., Pocahontas, Iowa, LB $95,508, grading 9.484 mi. Special FN-1062, Humboldt-Pocahontas Counties. Bids Sept. 11. CD 8/30.

Wilton Telephone Co., Herschel Flater, pres. and mgr., Wilton Junction, Iowa, Force Account, $254,000, imprvs. exten. rural telephone system, incl. new lines, Cedar and Muscatine Counties, IOWA. Phillip L. Burns, 630 Davenport Bank Bldg., Davenport, Iowa, engrs. CD 9/10.

Dobson & Robinson Constr. Co., 823 1st Natl. Bank Bldg., Lincoln, Neb., CA $509,750, pipe lines in Ashland Well Field, LINCOLN, NEB. City, City Hall, Lincoln, Neb. Bids Aug. 22, awarded Aug. 27. CD 8/28, under LB.

OKLAHOMA—State Hy. Dpt., Capitol, Oklahoma City, Zone 5,

Okla.—W. E. Hodges, 1633 N. Eastern St., Oklahoma City, Okla., CA $99,802, est. $106,331, concrete, steel bridge, US 77, north edge of Guthrie, Logan Co.;

Okla.—Cosmo Constr. Co., 1710 N. Broadway, Oklahoma City, Okla., CA $292,645, est. $313,511, five concrete, steel bridges, US 66 bypass in Tulsa, Tulsa Co.;

Okla.—Henryetta constr. Co., Henryetta, Okla., CA $574,548, est. $525,103, six grade separations, on US 66 bypass in Tulsa, Tulsa Co. Grand total $966,995. Bids Sept. 11, awarded Sept. 12. CD 9/4, 8/30.

▲ OKLAHOMA—State Hy. Dpt., Capitol, Oklahoma City, Okla.—Austin Contr. Co., Box 1590, Dallas, Tex., LB $595,250, est. $555,799, soil cement base with P.C. conc. 7.635 mi. US 66, west of Erick, Beckham Co.;

Okla.—Brooks & McConnell, 5020 N.W. 16 St., Oklahoma City 7, Okla., CA $437,311, est. $420,209, stabil. aggregate base with P.C. conc. 2.153 mi. US 81 at Minnekah, Grady Co.;

Okla.—Cohenour Constr. Co., Ardmore, Okla., CA $107,653, est. $127,236, stabil. aggregate base with double bit. surf. 3.972 mi. US 270 at Hodgens, Leflore Co.;

Okla.—Curry Materials Co., Antlers, Okla., CA $264,668, est. $270,241, stabil. aggregate base with double bit. surf. 7.854 mi. Hy. 87 through Harris, McCurtain Co.;

Okla.—S. E. Evans, Inc., Box 903, Fort Smith, Ark., CA $103,790, est. $139,798, grade, drain 5.004 mi. US 266, McIntosh Co.; CA $113,415, est. $135,859, grade, drain 2.24 mi. US 271, northeast of Talihina, Leflore Co.; CA $123,058, est. $145,633, grade, drain 2.17 mi. US 271, at Talihina, Leflore Co.;

Okla.—Horn & Smith, Laxton, Okla., CA $231,613, est. $241,049, conc. 1.132 mi. US 283, in Mangum, Greer Co.;

Okla.—Hunter Constr. Co., Ada, Okla., CA $212,849, est. $218,145, stabil. aggregate base with rock asph. surf. 5.259 mi. Hy. 48 south of Tupelo, Coal Co.;

Okla.—Imperial Paving Co., 700 E. Grand St., Oklahoma City 4, Okla., CA $344,972, est. $316,541, stabil. aggregate base, b. conc. surf. 0.93 mi. May Ave., south of 13 St., Oklahoma City, Oklahoma Co.;

Okla.—Clarence Keck, Fairview, Okla., CA $99,932, est. $142,662, grade, drain 5.931 mi. Hy. 47, west of Thomas, Custer Co.;

Okla.—Haskell Lemon, 3014 N.W. 49 St., Oklahoma City, Okla., CA $151,798, est. $178,056, stabil. aggregate base with double bit. surf. 5.229 mi. Hy. 99-B, south of Wewoka, Seminole Co.; CA $148,548, est. $172,481, stabil. aggregate base with double bit. surf. 4.56 mi. Hy. 99-B, east of Bowlegs, Seminole Co.;

Okla.—McConnell Constr. Co., 5020 N.W. 16 St., Oklahoma City, Okla., CA $138,248, est. $143,693, stabil. aggregate base, double bit. surf. 5.414 mi. Hy. 10, Welch, Craig Co.;

Okla.—Mosher & Kiker, El Reno, Okla., CA $191,527, est. $226,499, grade, drain 2.885 mi. US 77, south Canadian River Bridge, Goodlsby, McClain Co.;

Okla.—Standard Industries, 2119 E. 11 St., Tulsa, Okla., CA $99,359, est. $100,598, stabil. aggregate base with double bit. surf. 2.421 mi. county road at Drumright, Creek Co.; CA $116,342, est. $138,587, c. conc. 0.903 mi. Hy. 97 in Sapulpa, Creek Co.;

Okla.—H. D. Youngman, Baxter Springs, Kan., CA, $488,454, est. $578,668, stabil. aggregate base with b. conc. surf. 6.553 mi. US 69 at Kiowa, Pittsburg Co. Grand total $3,968,787. Bids Sept. 11, awarded Sept. 12. CD 8/30, 9/4.

TEXAS—State Hy. Comn., Austin,

Tex.—Austin Bridge Co., P. O. Box 1590, Dallas, Tex., LB $387,571, 2.669 mi. Guadalupe River and 12 mi. Coleto Bridge and approaches, Hy. FM 766 and 237, Proj. R 1113-1-4 and R 941-4-2, DeWitt and Victoria Counties;

Tex.—Callan Constr. Co., P. O. Box 5146, Waco, Tex., LB $147,857, 0.642 mi. Paluxy River Bridge and approaches, Hy. US 67, Proj. F 1048 (4), Somervell Co.;

Tex.—J. C. McLaughlin, P. O. Box 1149, Bryan, Tex., LB $76,517, bridge and approaches, 0.535 mi. Hy. FM 956, Proj. C 475-9-6, Trinity Co. Bids Sept. 11. CD 8/22.

TEXAS—State Hy. Comn., Austin,

Tex.—M. E. Worrell, Junction, Tex., LB $125,443, San Felipe Creek bridges and approaches, 0.756 mi. Hy. US 90, Proj. F 213 (6), Val Verde Co.;

Tex.—Kidwell & Rogers Constr. Co., 4515 Prentice St., Dallas, Tex., LB $182,799, widening bridges, 0.286 mi. Hy. US 190, Proj. C 231-1&4-17&12, Bell Co.;

Tex.—Heldenfels Bros., P. O. Box 1917, Corpus Christi, Tex., LB $187,328, bridges and approaches 1.229 mi. Hy. FM 530 and 1157, Proj. R 1040-1-4, R 1307-1-6, Jackson Co. Bids Sept. 12. CD 8/22, 8/30.

▲ TEXAS—State Hy. Comn., Austin,

Tex.—John F. Buckner & Sons, P. O. Box 76, Glenburne, Tex., LB $270,240, flexible base, hot mix b. conc. pavement 1.13 mi. Hy. SH 174 and 171, Proj. F 1093 (3), Johnson Co.;

Tex.—Callan Constr. Co., P. O. Box 5146, Waco, Tex., LB $92,744, grading, structures, base, surf. 4.839 mi. Hy. FM 2307, Proj. R 2171-1-1, Falls Co.;

Tex.—Harry Campbell, Rte. 5, Box 68-A, Abilene, Tex., LB $164,183, flexible base, hot mix b. conc. pavement 13.074 mi. Hy. US 67 and 377, Proj. F 83 (3), Brown Co.;

Tex.—H. V. Caver, Inc., P. O. Box 184, Atlanta, Tex., LB $116,418, grading, structures, base, surf. 6.065 mi. Hy. FM 2327, Proj. R 2241-1-1, Cass Co.;

Tex.—Cooper & Woodruff, Inc., 204 Mays Bldg., Amarillo, Tex., LB $434,979, grading, structures, base, surf. 15.785 mi. Hy. RM 1061, Proj. R 1245-2-4, Potter Co.;

Tex.—Joe Davidson, P. O. Box 419, Terrell, Tex., LB $127,306, grading, structures, base, surf. 7.225 mi. Hy. FM 2329, Proj. R 2196-1-1, Henderson Co.;

Tex.—F. C. Herrling, Kurten, Tex., LB $424,892, extend structures, widen, leveling 9.557 mi. Hy. US 84, F 450 (5), Freestone Co.;

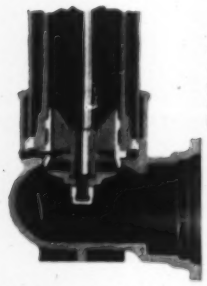
Tex.—Kelso Constr. Co., P. O. Box 671, Sherman, Tex., LB $191,947, c. conc. and T & P overpass, 0.64 mi. Hy. US 69, Proj. F 707 (1) and FG 707 (2), Grayson Co.;

Tex.—R. W. McKinney, P. O. Box 190, Nacogdoches, Tex., LB $335,517, grading, structures, base, surf.

DEPENDABLE PROTECTION
only
about fire hydrants:

2. Can the hydrant be quickly replaced if broken in a traffic accident?

When you have Mathews Hydrants on the job, neighborhood fire protection can suffer only momentary interruption. A broken Mathews Hydrant can be replaced with a new barrel in less than half an hour, and *without excavating.*



Available for mechanical joint connections

Main valve, true compression type, opens against and closes with water pressure. The higher the pressure, the tighter the valve. When hydrant is broken in traffic accident, there's no leakage with consequent dangerous loss of pressure.

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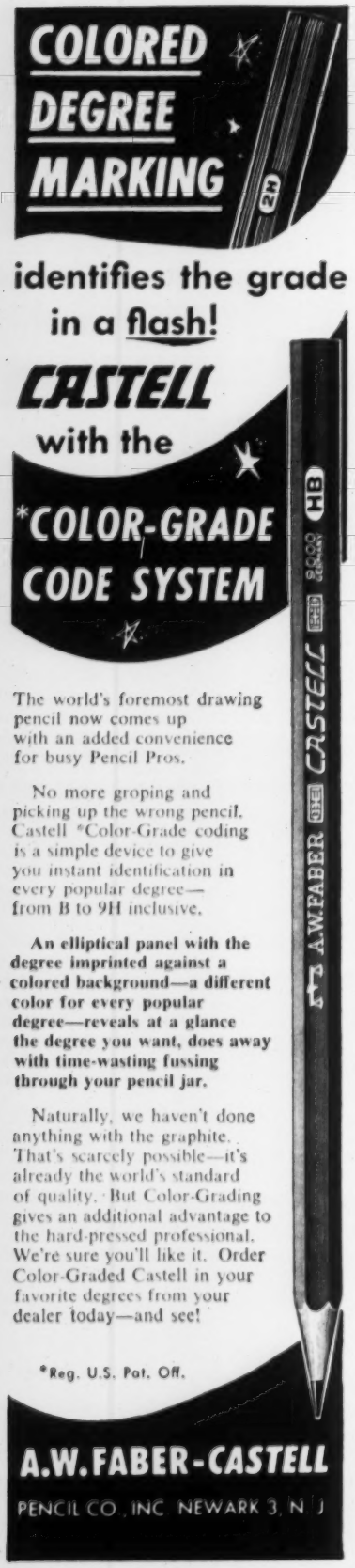
Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds) and R. D. Wood Gate Valves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PENCIL CO., INC. NEWARK 3, N. J.
A.W.FABER CASTELL 9000 HB

7.962 mi. Hy. FM 1281, Proj. S 2101 (1), Grayson and Fannin Counties;

Tex.—**South Texas Constr. Co.**, P. O. Box 3536, Corpus Christi, Tex., LB $142,312, grading, structures, base, surf. 4.452 mi. Hy. FM 1302, Proj. S 2121 (1), Victoria Co.;

Tex.—**Dean Word Co.**, P. O. Box 330, New Braunfels, Tex., LB $1,323,438, flexible base, hot mix b. conc. 4.387 mi. Hy. US 81, Proj. I 8 (14), Travis Co. Bids Sept. 12. CD 8/22, 8/30.

▲ **TEXAS**—State Hy. Comn., Austin;

Tex.—**Austin Bridge & Austin Road Co.**, P. O. Box 1590, Dallas 1, Tex., LB $1,261,652, grading, storm sewers, c. conc. 0.681 mi. Hy. US 67 and 77, Proj. I 288 (7) Dallas Co.;

Tex.—**Aydock-Mitchell, Inc.**, 2074½ W. Rusk St., Marshall, Tex., LB $77,300, grading structures, base, surf. 3.646 mi. Hy. FM 2348, Proj. R 2240-1-1, Titus Co.;

Tex.—**Baker, Bryson & Haner, Inc.**, P. O. 190, Borger, Tex., LB $82,772, grading structures base, surf. 7.037 mi. Hy. FM 2356, Proj. R 2219-1-1, Deaf Smith Co.;

Tex.—**R. C. Buckner**, P. O. Box 609, Jacksonville, Tex. LB $97,503, grading, structures, base surf. 0.995 mi. Hy. FM 839, Proj. R 545-5-4, Rusk Co.;

Tex.—**Centex Paving Co.**, P. O. Box 9062, San Antonio, Tex., LB $205,781, grading, structures base surf. 9.844 mi. Hy. FM 2288, Proj. S 2039 (1), Tom Green Co.;

Tex.—**Fred Hall & Son**, P. O. Box 488, Valley Mills, Tex. LB $224,789, grading, structures, base, surf. 8.849 mi. Hy. FM 1671 and 2269, Proj. S 2110 (1) and (2) and R 1656-1-4, Bell and Milan Counties;

Tex.—**Heidenfels Bros.**, P. O. Box 917, Corpus Christi, Tex. LB $787,142, flexible base, b. conc. 2.912 mi. Hy. SH 9 and US 77, Proj. F 657 (14), San Patricio and Nueces Countries;

Tex.—**Holland Page**, P. O. Box 1181, Austin, Tex. LB $121,464, grading structures base surf. 6.146 mi. Hy. FM 1467, Proj. R 1038-2-3, Brown Co.;

Tex.—**O. W. Howard** and **J. C. McLaughlin**, Madisonville and Bryan, Tex., LB $250,614, grading, structures, base surf. and St. L.S.W. R.R. underpass 8.822 mi. Hy. FM 1803 and Spur 164, Proj. R 2075-2-1 and C 164-5-4, Deaf Smith Co.;

Tex.—**Killian-House Co.**, 4600 Broadway, San Antonio, Tex., LB $1,096,094, flexible base, hot mix b. conc. 3.249 mi. Loop 13, Proj. I 1075 (6), Bexar Co.;

Tex.—**L. H. Lacy Co.**, 5630 Yale Blvd., Dallas, Tex. LB $927,984, grading, structures, G. C. and S. F. Ry. overpass 12.126 mi. Hy. US 82, Proj. F 595 (12), F 549 (7), F FG 549 (8), Cooke Co.;

Tex.—**R. W. McKinney**, P. O. Box 190, Nacogdoches, Tex. LB $198,142, grading, structures, base, surf. 9.25 mi. Hy. FM 1396, Proj. R 1979-1-2, Fannin Co.;

Tex.—**McMillin-Burkett Constr. Co.**, P. O. Box 1161, Texarkana, Tex., LB $212,201, grading, structures, base and surf. 7.943 mi. Hy. FM 270, Proj. R 766-4-2, R 767-2-1, Hopkins Co.;

Tex.—**Menefee Bros.**, P. O. Box 431, Center, Tex. LB $95,573, grading, structures, base surf. 5 mi. Hy. FM 365, Proj. S 38 (7 Newton Co. LB $133,890, grading, structures, base, surf. 5.294 mi. Hy. FM 1401, Proj. R 394-3-8, Panola Co.;

Tex.—**Henry L. Stafford**, P. O. Box 1047, Lubbock, Tex. LB $101,119, grading, structures, base surf. 10.148 mi. Hy. FM 2032, Proj. R 1872-2-3, Howard Co.;

Tex.—**Texas Bitulithic Co.**, P. O. Box 10365, Dallas, Tex. LB $1,092,126, flexible base, c. conc. pavement, base hot mix b. conc. 0.714 mi. Hy. Loop 217, Proj. U 1101 (6) and U-UG 1101 (7), Tarrant Co.;

Tex.—**Williams Bros. Constr. Co.**, 3311 Montrose Blvd., Houston, Tex., LB $339,296, grading, structures 9.244 mi. Hy. FM 2246, Proj. S 2136 (1), Jasper Co. Bids Sept. 11. CD 8/22, 8/30.

Way Engineering Co., 3232 Louisiana St., Houston, Tex. LB $930,222, air-conditioning for state capitol bldg., AUSTIN, TEX. State, State Bd. Control, Capitol Bldg., Austin, Tex. C. H. Page & Son, 1st Federal Savings & Loan Bldg., Austin, Tex., archts. Bids Sept. 12. CD 12/1/55, under Public Buildings.

▲ **City P. Service Bd.**, Navarro and Villita Sts., San Antonio, Tex. Own Forces, $275,000, overhead electric power lines; $750,000, addnl. underground electric distr. cable lines; $500,000, addnl. electric distr. transformers, SAN ANTONIO, TEX. Grand total $1,525,000. CD 1/25/56.

COLORADO—State Hy. Dpt., 4201 E. Arkansas St., Denver;

Smith & Lucas, Colorado Springs, Colo., CA, $575,556, est. $544,000, grading, structures 13.074 mi. FI 002-2 (37), Denver, Arapahoe and Douglas Counties. Bids Sept. 12. CD 9/6.

COLORADO—State Hy. Dpt., 4201 E. Arkansas St., Denver;

Hoyle Lowdermilk, 1950 W. Dartmouth St., Denver, Colo., CA, $464,718, est. $428,000, road mix asph. processing 8.538 mi. Colo. Proj. A-AA 15 (3); road mix asph. processing S 7-851 mi. A-AA 1 (11), Montrose and San Miguel Counties. Bids Sept. 7. CD 8/29.

COLORADO—State Hy. Dpt., 4201 E. Arkansas St., Denver;

L. J. Hesser, Greeley, Colo., CA, $310,433, est. $294,000, c. conc. wid'n. plant mix overlay and structures 5.745 mi. Longmont, Colo. Proj. C 07-0001-09, Boulder and Larimer Counties. Bids Sept. 7.

† **J. S. Brown-E. F. Olds Plumbing & Heating Co.**, Box 1215, Colorado Springs, Colo., CA, $804,718, service and supply area (utilities) IFB 05-613-22 Air Force Academy, COLORADO SPRINGS, COLO. Dpt. Air Force, P. O. Box 1670, Colorado Springs, Colo. Bids Aug. 28, awarded Sept. 5. CD 9/12, under LB.

BUILDINGS—LB & CA

Olson Constr. Co., 410 S. 7 St., Lincoln, Neb., CA $600,000. OFFICE, LINCOLN, NEB. State Farm Mutual Automobile Insurance Co., 1014 "O" St., Lincoln, Neb. Ellerbe & Co., E-1st Natl. Bank Bldg., St. Paul, Minn., archts. CD 4/6.

Parsons Constr. Co., 2512 Deer Park Blvd., Omaha, Neb. LB $952,450, general constr. Creighton High School Prep. SCHOOL, 72nd and Western Ave., OMAHA, NEB. Creighton University, 27 and Hamilton Sts., Omaha, Neb. Bids Sept. 11. CD 8/22.

▲† **Quaker Valley Constructors, Inc.**, P. O. Box B, Pittsburg, Kan., CA, $1,006,600, HELIUM PLANT addn., EXELL, TEX. Bureau Mines, Dpt. Interior, Helium Activity, Box 911, Amarillo, Tex. CD 8/1.

▲ **American Constr. Co.**, Box 13037, Houston, Tex., CA, $2,192,700, est. $2,000,000, 155,000 sq. ft. masonry Sunnyside-Grimes area JUNIOR HIGH SCHOOL, HOUSTON, TEX. Houston Independent School Dist., 1300 Capitol St., Houston, Tex. Bids Sept. 5. CD 8/9.

▲ **J. J. Fritch, General Contractor, Inc.**, 6834 Harry Hines Blvd., Dallas, Tex., CA, $1,533,000, womens DORMITORY and DINING HALL, LUBBOCK, TEX. Texas Technological College, Lubbock, Tex. Bids Sept. 5. CD 9/11, under LB.

James Newton, Box 4108, Odessa, Tex., CA, $615,400, Elementary SCHOOLS Nos. 1 and 2, MONAHANS-WICKETT, TEX. Monahans-Wickett Independent School Dist., Wesley Martin, supt., Monahans, Tex. Bids Sept. 6. CD 3/28.

▲ **Foster Wheeler Corp.**, 165 Broadway, New York 6, N. Y. CA Total est. $23,000,000, design and constr. PLANT expansion incl. new steam generation, cooling water utilities, inter-plant facilities, PORT NECHES, TEX. Neches Butane Products Co. (Texas-U. S. Chemical Co. and Goodrich-Gulf Chemicals, Inc.), Port Neches, Tex. CD 7/3.

▲ **A. A. & E. B. Jones**, 1050 S. Jason St., Denver, Colo., LB $1,048,791, general contract 3 story, 144x259 ft. HOSPITAL Addn., DENVER, COLO. Childrens Hospital, 1056 E. 19 Ave., Denver, Colo. Bids Sept. 6. CD 8/21.

▲ **McDonald Bros.**, 2639 S. Laciengа St., Los Angeles, Calif., LB $1,777,425. TEST STAND No. 1, and mech. specialties, Glenn L. Martin Plant, DENVER, COLO. Glenn L. Martin Co., 1845 Sherman St. Denver, Colo. Bids Sept. 4. Aero Jet General Corp., 410 N. Citrus Ave., Covina, Calif., engrs.

FAR WEST

BUILDINGS—BA

▲ **Calif., Los Angeles**—HEADQUARTERS—BA. 9/17—Dpt. Water & Power, 311 S. Spring St., East Valley District Headquarters, 12730 Saticoy St. $1,000,000. Plans deposit $100. Extended date. CD 8/3.

BUILDINGS—SLC

Wash., Seattle—CLASSROOM—Seattle University, Broadway and E. Madison St., soon lets contract 5 story 60,000 sq. ft., rein.-con. classroom bldg. Over $600,000. J. W. Maloney, Central Bldg., Zone 4, archt. CD 9/4.

HEAVY CONSTRUCTION—LB & CA

† **IDAHO**—Bureau P. Rds., Dpt. Commerce, 408 N. 10 St., Boise;

W. L. McNutt, Eugene, Ore., LB $475,809 (6 bidders) bit. paving 2.422 mi. North Fork Payette, Hy. Proj. 23-A13, Valley Co. Bids Sept. 11.

▲ **Utah Constr. Co.**, 142 East Third South, Salt Lake City, Utah, CA $8,000,000 18,000 ft. ore haulage tunnel, driving project at the big Bingham Open cut mine, Bingham Canyon, Salt Lake Co., UTAH. Kennecott Copper Corp., F. C. Green, asst. gen. mgr., Bingham Canyon, Utah.

▲† **Mountain States Constr. Co.**, 9200 W. West Colfax St., Denver, Colo., LB $2,452,340, est. $3,845,100 right diversion tunnel, Glen Canyon Dam, Middle River Div., Colorado River Storage Proj. Colorado River on Leess Ferry, Spec. DC 4747, ARIZONA and UTAH. Bureau Reclamation, Dpt. Interior, Kanab, Utah. Bids Sept. 11. CD 8/8.

† **Headquarters**, 365th Air Division, Office of Contracting Officer, Davis-Monthan Air Force Base, Tucson, Ariz., cancelled bids to have been opened Aug. 6, 5 Senior Officers QUARTERS, site grading, drainage work, parking areas, driveways and walks, outside utilities, incl. water distr. sanitary sewer distr., gas and electrical dist., finish grading, planting and seeding, Davis-Monthan Air Force Base, No. 02-601-57-2, TUCSON, ARIZ. CD 7/19.

† **Commercial Builders**, Moscow, Idaho, CA $618,030, est. $561,641; Frenchman Springs pumping plant discharge lines, approach lateral WS3.2, Block 79, Columbia Basin Proj. Spec. DC 4698, WASHINGTON. Bureau Reclamation, Dpt. Interior, Ephrata, Wash. Bids Aug. 14, awarded Sept. 10. CD 8/22, under LB.

WASHINGTON—State Hy. Comn., Olympia, Wash.—**R. Wamberg**, 77 West Shore St. S. W., Tacoma, Wash., LB $153,525 (2 bidders) stockpiling crushed stone surf. ballast, sand & mineral aggreg. State Hy. 15-15C and 15-D, Peshastic Creek, Chelan Co.;

(Continued on page 88)

STEEL **BRIDGES**

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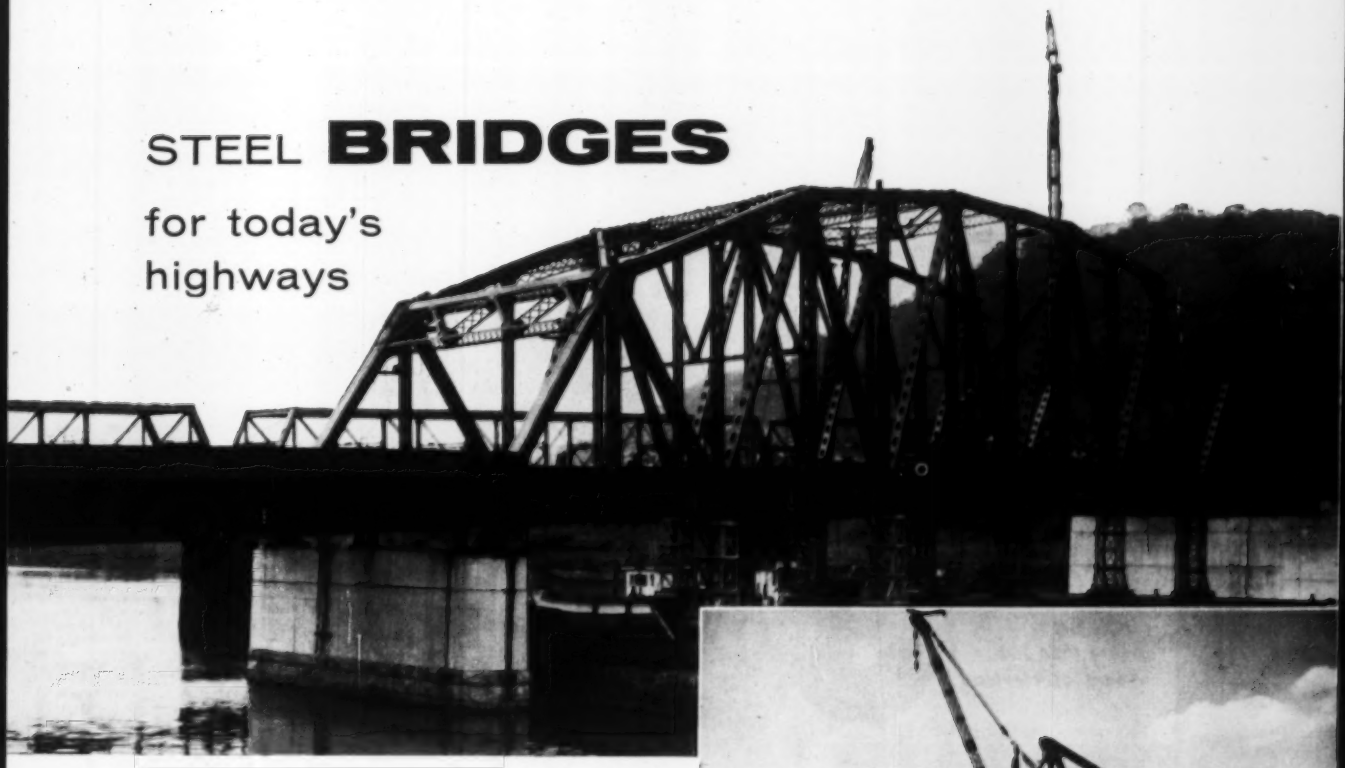
highways



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(Continued from page 86)

Wash.—D-H Paving Co., 6808 Highway 99, Vancouver, Wash., LB $73,736 (4 bidders) grading, surf. emulsified asph. base tr. 2.819 mi. FAS S-0614 (1) Clark Co.

Wash.—Erland & Blickle, 8265 N. Borthwick Ave., Portland, Ore., LB $272,113 (2 bidders) grading, surf. cement-treated base & conc. paving, installing illumination sys., 0.993 mi. Primary State Hy. 12, U-004-2 (10), Cowlitz Co.

Wash.—Carbon Brothers, N. 3430 Cook St., Spokane, Wash., LB $83,362 (2 bidders) stockpiling crushed stone surf., marl rock, mineral aggreg. and sand Primary State Hy. 3 and 22, Ferry and Stevens Counties.

Wash.—Inland Asphalt Co., 10 and Havana St., Spokane, Wash., LB $99,286 (3 bidders) bit. surf., b. conc. paving, 1.13 mi. Sec. State Hy. 3-H, Spokane Co.

Wash.—F. G. Bayliss, Kardley, Wash., LB $128,886 (3 bidders) crushed stone surf., 2.321 mi. S. 0669 (1), Whitman Co. Bids Sept. 11. CD 8/27.

▲† E-W Constr. Co., 3170 W. 11 St., Eugene, Ore., CA $6,204,770. Wahluke Siphon Station 0 plus 00 to Station 154 plus 05.13, Wahluke Branch Canal and PE 16.4 wasteway, Station 577 plus 40 to Station 677 plus 26, Columbia Basin Proj., Spec. DC 4620, WASHINGTON, Bureau Reclamation, Dpt. Interior, Ephrata, Wash. Bids Aug. 21. CD 8/24, under LB.

▲ S. Morgan Smith Co., York, Pa., CA Est. $3,250,000, five hydraulic turbine units for Swift Creek Power Plant No. 1 and No. 2, WASHINGTON, Pacific Power & Light Co., and Cowlitz County Public Utility District, 920 S.W. 6 St., Portland, Ore. Bechtel Corp., 220 Bush St., San Francisco, Calif., engrs. CD 10/21/53.

BUILDINGS—LB & CA

Family Land Co., 2918 W. Compton Blvd., Gardena, Calif., CA, $493,000, 45 DWELLINGS, Rahn Ave., Barclay and Patterson Sts., DUMINGUEZ, CALIF. Sante Two Constr. Co. & Quarry Homes, Inc., 2918 West Compton Blvd., Gardena, Calif.

Stanton-Reed Co., 720 S. Palm Ave., Alhambra, Calif., LB $796,661, COUNTY BLDGS., 350 W. 5 Ave., POMONA, CALIF. Los Angeles Co., Hall of Records, Los Angeles, Calif. Bids Sept. 5. CD 8/16.

▲ The Clarewood Co., Berkley, Calif., CA Est. $2,000,000, lift truck mfg. PLANT, SAN LEANDRO, CALIF. Yale & Towne Mfg. Co., 2438 West 3 St., Los Angeles 57, Calif. Wilsey & Ham, 111 Rollins Rd., Millbrae, engrs. CD 6/28.

Evert & Payton, 717 Main St., Santa Paula, Calif., CA, $719,985, DINING COMMONS, Goleta Campus, SANTA BARBARA, CALIF. University of California, Santa Barbara College, Goleta, Calif. Bids Aug. 7. CD 8/16, under LB.

Berlin Constr. Co., 1213 N. Highland Ave., Hollywood 38, Calif., CA, $846,000, 94 DWELLINGS, Tract 2544, STANTON, CALIF. Clover Park, 1213 N. Highland Ave., Hollywood 38, Calif. William C. Jarret, 1124 S. Beverly Blvd., Los Angeles 35, Calif., archt.

CANADA

BUILDINGS—BA

Ont., Islington—MUNICIPAL BLDG.—BA 10/9. Township of Etobicoke, 4946 Dundas St. W., 3 story section 60x260 ft.; 2 story section 60x100 ft., rein.-con. fdn. and frame, stone and brick walls, concrete roof deck, L-shaped municipal bldg., Highway 27 and Burnhamthorpe Rd., $750,000. Plans deposit $50. Shore & Moffat, 51 Wellington St. W., Toronto, archts. CD 11/11/53.

BUILDINGS—SLC

Alta., Edmonton—WAREHOUSE—Simpson-Sears Ltd., 108 Mutual St., Toronto, Ont., soon lets contract warehouse, 112 Ave., $450,000. Rule, Wynn & Rule, 11422 Jasper Ave., archts.

Que., Montreal—APARTMENTS—Degmey Investment Corp., c/o Thibodeau & Thibodeau, archts, 940 Cote de Liesse Rd., soon lets contract, 3 blocks of apartments, Plymouth Rd. $750,000. Deslauriers & Mercier, 1396 St. Catherine St. W., engrs.

HEAVY CONSTRUCTION—LB & CA

ALBERTA—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont.
New West Constr. Co. Ltd., 10480 113 St., Edmonton, Alta., CA, $852,622, culverts, grading, base course and prime coat from Mile 22 to Mile 28, Banff-Jasper Highway, Banff. Awarded Sept. 4. CD 5/14, under LB.

ALBERTA—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont.
Mannix-Ludwig Ltd., 330-336 7 Ave. S.W., Calgary, Alta., CA, $891,427 grading, culverts, base course and prime coat along 6 mi. Banff-Jasper Highway from Mile 28 to Mile 34, Banff. Awarded Sept. 4. CD 5/24.

▲ BRITISH COLUMBIA—B.C. Govt., Parliament Bldgs., Victoria.
General Constr. Co. Ltd., Granville Island, Vancouver, B. C., and Pacific Bridge Co., 256 Montgomery St., San Francisco, Calif., U.S.A., CA, $4,743,885, floating structure, piers and abutments for toll bridge, across Okanagan Lake at Kelowna. Bids Aug. 16. CD 8/29, under LB.

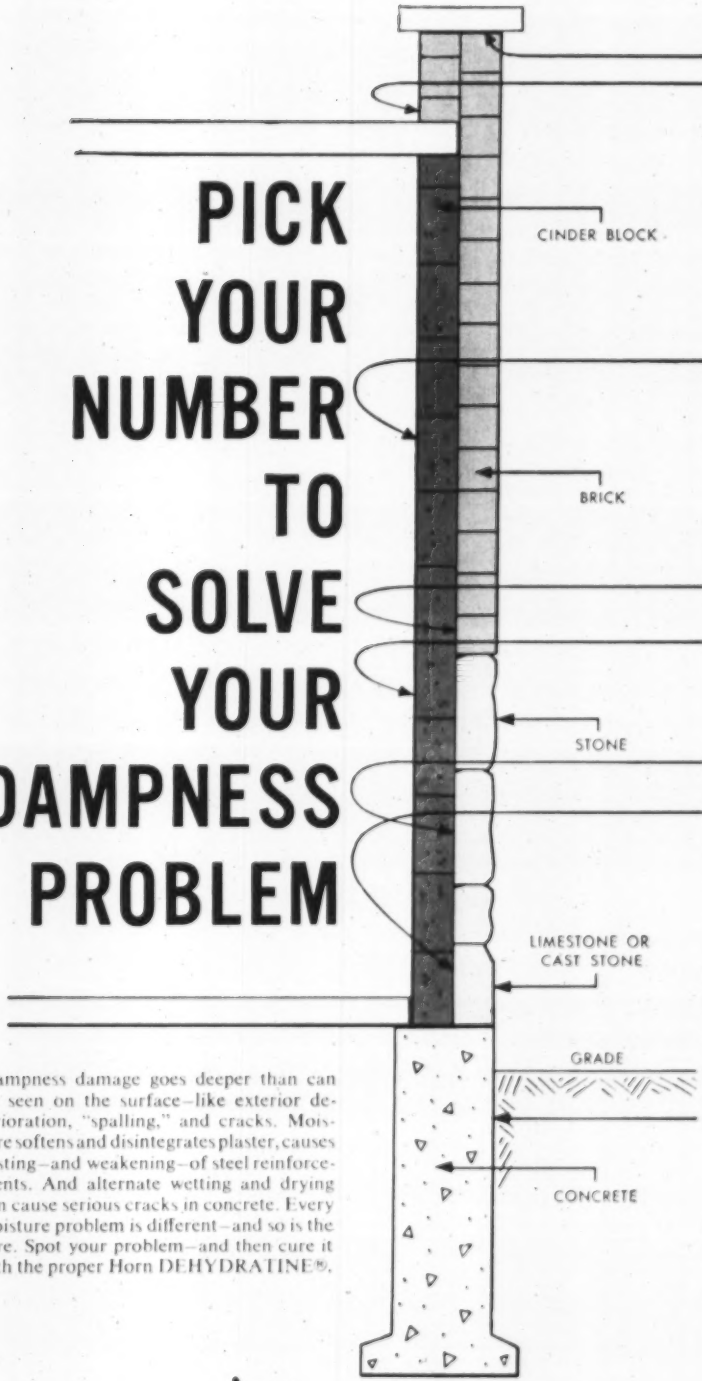
BUILDINGS—LB & CA

▲ Brookfield Constr. Co. Ltd., 32 Inglis St., Halifax, N. S., CA, $2,699,175, 255 HOUSING UNITS with related services, Gagetown Army Camp, FREDERICTON, N. B. Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. Bids Aug. 14, awarded Sept. 13. CD 7/27.

M. F. Schurman Co. Ltd., Eustane St., Summerside, P.E.I., CA, $525,500, Class I, 19-room standard SCHOOL with related services, Army Camp, Camp Gagetown, FREDERICTON, N. B. Defence Constr.

(Continued on page 90)

PICK YOUR NUMBER TO SOLVE YOUR DAMPNESS PROBLEM



Dampness damage goes deeper than can be seen on the surface—like exterior deterioration, "spalling," and cracks. Moisture softens and disintegrates plaster, causes rusting—and weakening—of steel reinforcements. And alternate wetting and drying can cause serious cracks in concrete. Every moisture problem is different—and so is the cure. Spot your problem—and then cure it with the proper Horn DEHYDRATINE®.

TO KEEP DAMPNESS FROM CONCRETE and MASONRY SECTION, select DEHYDRATINE #6. It is applied cold with a trowel to develop a continuous heavy film. It keeps dampness from concrete and masonry sections such as foundation walls, bridge abutments, retaining walls, culverts, footings, concrete floors, rear of parapet walls, etc.

TO SPAN HOLES AND CRACKS, use DEHYDRATINE #10. It's a heavy bituminous dampproof coating that spans holes and cracks. It bonds solidly to any masonry or metal . . . receives lime and gypsum plasters.

FOR SURFACES OF LOW POROSITY, use DEHYDRATINE #1. On surfaces of low porosity where bridging of surface pores is not required . . . receives gypsum and lime plasters.

FOR A STONE BACKING, use DEHYDRATINE #3. A special quick-drying bituminous brush coating which protects stone and masonry trim from staining caused by moisture. It also reduces warping and dry rot of wood trim.

TO DAMPPROOF DAMP MASONRY, use DEHYDRATINE #4. It contains a wetting agent to develop maximum bond with damp or "green" masonry . . . resists acid and alkali, provides a barrier against ground and water gases. DEHYDRATINE #6 can also be used here.

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(Continued from page 88)

(1951) Ltd., 56 Lyon St., Ottawa, Ont. Bids Aug. 7, awarded Sept. 13. CD 7/26.

▲ D. Robinson Constr. Ltd., Nanaimo, B. C., CA, $2,500,000. main section 7 story, 135-bed rein.-con. HOSPITAL with 2 story wing section, NEW WEST-MINISTER, B. C. St. Mary's Hospital, Royal Ave., New Westminster, B. C. Awarded Sept. 7. CD 11/30.

AMERICANS ABROAD

HEAVY CONSTRUCTION—LB & CA

▲† Agroman, Madrid, Spain, LB $1,230,000, electrical transmission line, telephone ducts, water supply sys. ZAR-2, ZARAGOZA, SPAIN. Bureau Yards & Docks, Dpt. Navy, 18 St. and Constitution Ave. N. W., Wash. 25, D. C., U. S. A. Bids Sept. 5. CD 8/22.

PROPOSED PROJECTS

WATER SUPPLY

▲ Ala., Birmingham—City, City Hall, Warrior River pumping station, below Sipsey Fork. $14,300,000. J. W. Goodwin Eng. Co., 2111 7th Ave. S., consult. engr.

▲ Md., Baltimore—City, Bureau Water Supply, 503 Municipal Bldg., bond election Nov. 6, water supply, incl. pipe line to Susquehanna River and enlarging and improving distr. system. $45,000,000. CD 5/9/55.

▲ Md., Rockville—City, Court House, voted water bond issue Sept. 10, for constr. 8 mi. 24 in. line, intake station, filtration plant, revamping of water sys. within city. $2,600,000. CD 8/20.

▲ Tex., Longview—City, J. Clyde Tomlinson, mayor, City Hall, constr. dam and spillway, located above existing lake, which is city's principal water supply, on Cherokee Bayou at Silvey Bridge, $3,500,000; water main, running from dam and reservoir, on Cherokee Bayou, to city limits, $750,000; water pumping unit, $200,000; water storage, prob. elevated tanks, $150,000; some water distr. lines, $150,000.

▲ Wash., Bellingham—City, City Hall, addnl. supply lines, $3,439,900. J. W. Cunningham & Assoc., Portland Trust Bldg., Portland, Ore., consult. engrs.

SEWERS, WASTE DISPOSAL

▲ Conn., East Haven—Town, Town Hall, town-wide sewerage sys., treatment plant. $1,240,000. Bowe, Albertson Assocs., 75 West St., New York, N. Y., consult. engrs. CD 2/4/44.

▲ Md., Baltimore—City, Bureau Sewers, 312 Municipal Bldg., Zone 2, bond election Nov. 6, sewers. $5,000,000. CD 11/9/54.

Wash., Seattle—Rainier Vista Sewer Dist., County-City Bldg., sewerage system. $900,000. Constr. may start next year.

BRIDGES

▲ NEBRASKA-IOWA—State Dpt. Roads & Irrigation, Lincoln, Neb. and State Hy. Comn., Ames, Iowa, bridge over Missouri River from Sioux City, Iowa to South Sioux City, Neb. $1,000,000. L. N. Ress, Lincoln, Neb. state engr.

▲ NEW JERSEY-PENNSYLVANIA—Delaware River Joint Toll Bridge Comn., Morrisville, Pa. bridge replacement, Point Pleasant and Sergeantsville, Bucks and Hunterdon Counties. $1,300,000. J. E. Greiner Co., 1106 N. Charles St., Baltimore, Md., consult. engr.

▲ Wash., Seattle—City, County-City Bldg., Zone 4, new approaches to Ballard Bridge and widening 15 Ave. W. $2,330,000. Bids next year. H. P. Powell, Smith Tower, Zone 4, consult. engr. CD 1/23/55.

STREETS AND ROADS

▲ Ill., Chicago—Cook Co., County Bldg., Stony Island Expressway from 79th to 107th. $30,000,000; paving and widening 87th St. between Cicero Ave. and Archer Rd. $4,500,000.

▲ NEW YORK—State Dpt. P. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany.
Erie Co.—Power Line Expressway (Grand Island Blvd. to Main St.), Buffalo. $1,500,000.

▲ OKLAHOMA—Oklahoma Turnpike Auth., 400 N. Walnut St., Oklahoma City.
Southern Toll Road to Texas border. Alternate routes, 107 mi. from Oklahoma City to Red River, $58,339,168; 100 mi. from Oklahoma City to Randlett, $53,361,635; or Oklahoma City to Lawton, $35,845,000. DeLeuw, Cather & Co., 150 N. Wacker Dr., Chicago 6, Ill., consult. engrs.

▲ WASHINGTON—State Hy. Comn., Olympia.
Yakima Co.—11 mi. limited access highway along Yakima River east of Yakima. $4,700,000. W. A. Bugge, dir. hys. Work next year.
Ont., Woodstock—Oxford County Council, County Bldgs., paving Governor's Road to new plant near Beachville. $860,000. J. A. Meathrall, County Bldgs., co. engr. CD 2/25/53.

▲ QUEBEC—Provincial Roads Dpt., Quebec City.
Chicoutimi—new 32 ft. wide with 22 ft. asph. highway Quebec Province, Tadoussac to Chicoutimi. $5,000,000. CD 1/12/48.

EARTHWORK, WATERWAYS

▲† Alabama and Georgia—U. S. Eng., 2301 Grant St., Mobile 7, Ala.; railroad relocations, Fort Gaines Reservoir, Patchen & Zimmerman Engineers, 1201½ Spring St. N. W., Atlanta, Ga., consult. engrs. CD 8/17/55.

▲† Alabama—U. S. Eng., 2301 Grant St., Mobile, Zone 7, Warrior Lock and Dam on Tombigbee River, Choctaw Co. $23,600,000 ($4,580,000 appropriated).

▲† Nebraska and Kansas—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., Bostwick Division, Missouri River Basin Proj. for completion of Loveewell Dam, clearing reservoir area, relocating transmission lines and highway, Franklin and Superior Floodway Channels, and on Courtland and Miller Canals and laterals, $4,938,000 appropriated. CD 12/11/52.

▲† Nebraska—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., Sargent Unit, Missouri River Basin Proj. to continue constr. of Woods Park pumping plant, Sargent Canal, laterals, detention dikes and channels, $1,214,000 appropriated. CD 5/25/44.

▲† Nebraska—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., Frenchman-Cambridge Division, Missouri River Basin Proj., continuation of Meeker-Driftwood distribution system and Riverside Canal, $3,238,000 appropriated. CD 5/25/44.

† New Mexico-Colorado—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., Navajo Dam unit start of constr. on Navajo Dam and reservoir and administration bldg. and warehouse. $800,000.

▲ Texas—Cummins Creek Water Control & Imprvt. Dist. No. 1, Columbus, building 31 dams on tributaries of Cummins Creek, Lee, Fayette and Colorado Counties. $1,000,000.

† Texas—U. S. Eng., Box 1600, Fort Worth, constr. West Levee, Part 2, extend storm sewers; emergency control structures for Dallas Floodway Exten. $500,000 appropriated. CD 8/13/53.

▲† Texas—U. S. Eng., 100 W. Vickery Blvd., Fort Worth, McGee Bend Dam in Angelina River. $4,000,000 appropriated. CD 10/27.

▲† Texas—U. S. Eng., Box 1224, Galveston, Buffalo Bayou Flood Control Proj. $6,900,000 appropriated. CD 9/30/54.

▲ Utah-Wyoming—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., Flaming Gorge Dam access road and temporary bridge, diversion tunnel, temporary housing units and administration bldgs. $1,300,000 appropriated. CD 9/7/44.

▲† Utah—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., Deer Creek power plant and appurtenant facilities, Provo River Project, $985,000 appropriated. CD 9/7/44.

▲† Utah—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., Wanship and Gateway power facilities, Weber Basin Project, $10,066,000 appropriated. CD 9/7/44.

▲† Washington—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo. completion of laterals, addnl. distribution facilities, Columbia Basin Proj. $14,561,402 appropriated. CD 9/15/55.

▲† Washington—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo. continuation of Roza Power Plant with capacity of 11,250 kilowatts, Yakima Proj., Roza Division, $1,726,154 appropriated.

▲† Washington—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., completion of pump discharge line for Amon Relift pumping plant and completion of distribution systems, Yakima Proj. $1,288,085 appropriated.

▲† Wyoming—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., complete work on pumping plant, distribution system, main pipe line of Bridgeport Bar unit, Brewster Flats pumping plants, distribution and transmission facilities, Chief Joseph Dam Proj. $1,283,000 appropriated. CD 8/13/52.

▲† Wyoming—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., Anchor Dam and reservoir, complete Lucerne pumping plants, canals and conduits, Owl Creek Unit, Missouri River Basin Proj. $1,005,000 appropriated. CD 7/30/45.

▲† Wyoming—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., continuation of Glendo Dam, highway and railroad relocation and foundations for Glendo power plant, Glendo Unit, Missouri River Basin Proj. $11,012,000 appropriated. CD 7/30/45.

▲† Wyoming—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo.; continuation of work on distribution system and start of Little Sandy Diversion Dam and Little Sandy Canal Eden Proj. $1,079,000 appropriated.

† Wyoming—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., repairing, relocating river outlet works and power penstock trashrack modification of Buffalo Bill Dam, stabilization of canal banks and lateral lining, constr. drains, Shoshone Proj. $554,000 appropriated.

† Wyoming—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo. completion of pumping plants, canals, conduits, laterals and other principal features of Highland Hanover and Bluff areas, Hanover-Bluff Unit, Missouri River Basin Proj. $640,000 appropriated.

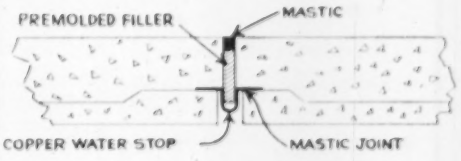
AIRPORTS

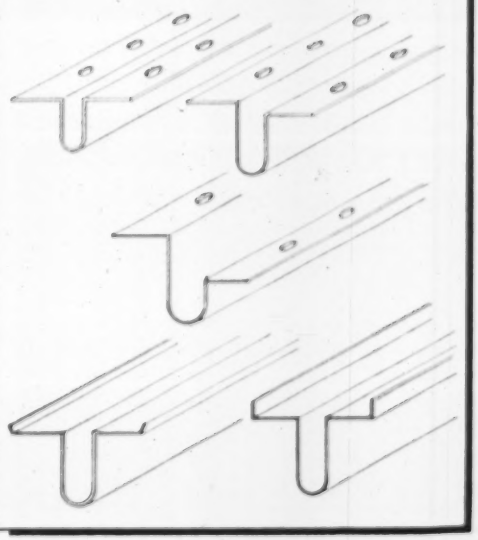
▲† Del., New Castle—RUNWAYS, etc.—U. S. Eng., 2635 Abbottsford Rd., Phila., Pa., plans by Edwards,

(Continued on page 92)

what they're doing with REVERE SHEET COPPER

INSET PHOTO ABOVE shows one of the many types of water stop expansion joints used on the N. Y. State Thruway and made of 20 oz. Revere Sheet Copper. 8 ft. lengths were presoldered into 24 ft. lengths before placing in joint, keeping the installation quick and simple. Detail is shown directly below with a few of the many types of joints used.





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(Continued from page 90)

Kelly & Beck, consult. engrs.-archts., 1805 Walnut St., Phila., Pa., runways and facilities, New Castle Air Force Base. $5,000,000. CD 8/21.

PUERTO RICO

Puerto Rico—DORMITORIES, etc.—Polytechnic Institute of Puerto Rico, San German, plans two dormitories and altering 2 buildings. $622,000.

▲ **Puerto Rico, Mayaguez**—DORMITORIES, etc.—University of Puerto Rico, San Juan, plans two men's dormitories, services bldg. $2,000,000.

▲ **Puerto Rico, Rio Piedras**—DORMITORY, etc.—University of Puerto Rico, San Juan, plans women's dormitory and service bldg. $1,000,000.

LATIN AMERICA

▲ **Guatemala, Guatemala City**—Republic of Guatemala, Jorge Lizarralde, secy. Comm. & P. Wks., Guatemala City, plans 50,000 hp. hydro-electric plant, $8,000,000. Brown & Root, Inc., 4600 Clinton St., Houston, Tex., U. S. A., consult. engr. CD 2/13/53.

Venezuela—CRUDE LINE—Mene Grande Oil Co., Oveja, Venezuela, plans 111 mi. 6 in. crude line, Elias to Pria; 10 mi. 1 in. Limon to Leona-Daciona lateral; 24 mi. 12- to 16-in. Oficina tank farm to Oveja, $667,000.

PUBLIC BUILDINGS

▲† **Ala., Birmingham**—RESERVE CENTER—U. S. Eng., 2301 Grant St., Mobile, Zone 7, Army Reserve Center in northeastern section of here, and one in northwestern section, $1,000,000.

Ala., Cullman—HOUSING—Cullman Housing Auth., Cullman, plans by Turner & Northington, Medical Arts Bldg., Florence, 60 housing units. $700,688.

Ala., Opelika—HOUSING—Opelika Housing Auth., Opelika, plans by Charles S. Rush, Auburn, 60 housing units. $678,657.

Ariz., Flagstaff—DORMITORY—State of Arizona, Phoenix, plans by Lescher & Mahoney, Box 1828, Phoenix, men's dormitory, Arizona State College. $500,000. CD 8/24.

▲ **Ariz., Tucson**—DORMITORIES—University of Arizona, men's dormitory and women's dormitory. $2,200,000. CD 2/7/46.

Calif., Garden Grove—SCHOOL—Alamitor School Dist., 12012 S. Magnolia Ave., plans by Daniel, Mann, Johnson & Mendenhall, 3325 Wilshire Blvd., Los Angeles, constr., north elementary school, near here. $550,000.

Calif., Los Angeles—COUNTY COURT Bd. Supervs., Los Angeles Co., 501 Hall of Records, plans by Albert Criz & Assoc., 2523 W. 9th St., county courts bldg., West Los Angeles area. $579,016.

▲ **Calif., Los Angeles**—SCHOOLS—Bd. Educ., 1425 S. San Pedro St., plans by Victor Gruen, 135 S. Doheny Dr., Beverly Hills, Rossiter Ave. School, Rossiter Ave. and Emory St., Los Angeles, $950,000; plans by Pereira & Luckman, 9220 Sunset Blvd., Lena Ave. School, West Canoga Park, $450,000; plans by James R. Friend, 708 Kress Bldg., Long Beach, South Shores School, 27 St., west of Western Ave., West San Pedro. $450,000. CD 4/8/55.

▲ **Calif., Orange**—PSYCHIATRIC BLDG.—Bd. Supervs. Orange Co., Court House, $1,750,000 bond election Nov. 6, psychiatric unit. CD 6/5.

Calif., Palm Springs—SCHOOL—Palm Springs Unified School Dist., plans by Williams, Clark, Trey & Chambers, 879 N. Palm Canyon Dr., masonry and granite Music and Auditorium Bldgs., steel roof constr. $600,000. CD 2/23/55.

▲ **Calif., San Diego**—CONVENTION HALL—City, Civic Center, San Diego, Calif. $8,500,000 bond election Nov. 6, convention hall.

▲ **Calif., Santa Ana**—COURT HOUSE—Bd. Supervs. Orange Co., Court House, $8,000,000 bond election Nov. 6, court house, county jail. CD 11/5/54.

▲ **Calif., Santa Ana**—HOSPITAL—Bd. Supervs. Orange Co., Court House, $5,500,000 bond election Nov. 6, 3 story, 100-bed main bldg., Orange County Hospital. CD 11/5/54.

▲ **Calif., Santa Maria**—SCHOOL—Santa Maria Union High School Dist., plans by Daniel, Mann, Johnson & Mendenhall, 3325 Wilshire Blvd., Los Angeles, high school, Cuyama. $1,000,000. CD 5/1/53.

Calif., West Covina—HOSPITAL—West Covina Hospital, 741 S. Orange Ave., 1 story 26,762 sq. ft. masonry hospital addn. $569,000. Adrian Wilson & Assocs., 816 W. 5th St., Los Angeles, consult. engrs.

▲ **Conn., Danbury**—HIGH SCHOOL—Town, Town Hall, high school. $1,500,000.

▲ **Conn., Hartford**—AUDITORIUM—City, City Hall, municipal multi-purpose auditorium, North Meadows. $1,000,000. Dean Lund, Pub. Adm. Serv., 1313 E. 60 St., Chicago, Ill., consult. engr.

▲ **Conn., Hartford**—FIRE STATIONS—City, City Hall, plans by Danl. J. Tasillo, city archt., 4 fire stations, Park Terrace, Warrenton Ave., Brown St., Barbour St. $1,195,000. Winfred W. DeMay, city engr. CD 11/18/48.

Del., Wilmington—SCHOOL—Wilmington Bd. Educ., 511 W. 8th St., plans by Stanhope & Manning, 902 Orange St., elementary school, 17th and West Sts. $750,000. CD 3/11/46.

▲ **Fla., Daytona Beach**—HOUSING—Daytona Beach Housing Auth., Daytona Beach, plans by Griffin & Gomon, P.O. Box 1671, 130 housing units. $1,676,100.

▲ **Fla., Pahokee**—HOUSING—Pahokee Housing Auth., Inc., P.O. Box 428, plans by Pickett, Borowski & Stetson, West Palm Beach, housing units. $1,500,000. CD 6/25/51.

Ga., Washington—HOUSING—Washington Housing Auth. plans by W. S. McDonald, 41 Exchange Place S.E., Atlanta, 50 housing units. $500,000. CD 4/1/52.

Ill., DuQuoin—HOUSING—DuQuoin Housing Auth., plans by Glen B. Frazier, 102 S. Bennett Ave., Urbana, 50 housing units. $704,000. CD 8/22.

▲ **Ill., Herrin**—HOUSING—Herrin Housing Auth., plans by Lee Potter Smith & Assocs., 2221 Broadway, Paducah, Ky., 100 housing units. $1,172,000. CD 8/22.

▲ **Ill., McHenry**—SCHOOL—School Dist. 156, 500 S. Green St., plans by McCaughey, Erickson, Kristmann & Stillewaugh, 3 S. Prospect Ave., Park Ridge, high school addn., 500 S. Green St. $1,250,000.

▲† **Iowa, Ames**—LABORATORY—Dpt. Agriculture, 14 St. and Independence Ave. S.W., Wash. 25, D. C., Agricultural Departments' animal disease laboratory project adjacent to Iowa State College. $18,915,000. This is a federal project, all federal funds.

▲ **La., New Orleans**—HOUSING—Tulane University, 6823 St. Charles Ave., plans by Goldstein, Parham & Labouisse, American Bank Bldg., 3 story, brick, tile 168 family housing units, (LA-16CM-11). $1,680,000. CD 3/29.

▲ **La., Opelousas**—HOUSING—Opelousas Housing Auth., Opelousas, plans by Matkin & Fitch, 2307 Ryan St., Lake Charles, 140 housing units. $1,000,000. M. J. Goudeau, Opelousas, engr.

▲ **Md., Baltimore**—CIVIC CENTER, etc.—City, Bureau Bldg. Constr., 410 Municipal Bldg., Zone 2, bond election Nov. 6, civic center-sports arena. $6,000,000.

▲ **Md., Baltimore**—SCHOOLS—City, Bureau Bldg. Constr., 410 Municipal Bldg., Zone 2, bond election Nov. 6, schools. $29,500,000. CD 11/9/54.

Mass., Grafton—SCHOOL—Town, Supt. Schools, 3 Central Square, plans by Hugh A. Stubbins & Assoc., 78 Mt. Auburn St., Cambridge, elementary school, North End, Waterville St., $588,000 appropriated. CD 1/5.

▲ **Mich., Inkster**—HOUSING—Inkster Housing Auth., Inkster, plans by Otis Winn & Co., Michigan Bldg., Detroit, Zone 26, 200 housing units. $2,999,907. Bids in January, 1957. CD 8/8.

▲ **Mich., Mount Clemens**—HOUSING—Mount Clemens Housing Auth., Mount Clemens, plans by Otis Winn, 524 Michigan Bldg., Detroit, Zone 26, 100 housing units. $1,500,000.

Mo., St. Charles—HOUSING—St. Charles Housing Auth., St. Charles, plans by Maguolo & Quick, 4908 Demar

(Continued on page 95)

GLULAM GIRDERS + CONCRETE ROADWAY
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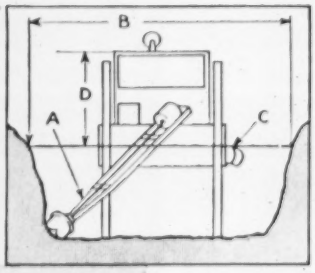
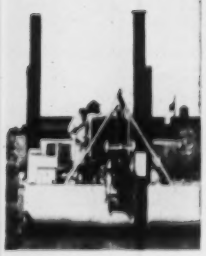
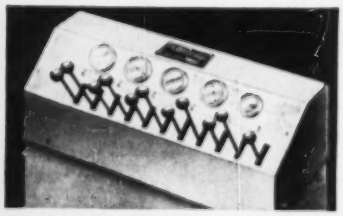
MANEUVERABILITY ➤ Moving ladder (A) eliminates need for swinging the entire dredge. As a result, these dredges require channel clearance (B) of only 13 feet for 6" and 8" models (16 feet for 10" and 12" models). Minimum draft (C) of 21 inches (for 6" model) and low superstructure (D) permit passage under bridges, through shallows and in other places formerly inaccessible to hydraulic dredges.



◄ PORTABILITY Complete Canal Dredge can be carried on low bed trailer or flatcar. At destination, a skid or single crane can place it where desired.



◄ WALKING ACTION New spud system on Canal Dredge includes both positioning spuds and walking spuds to move dredge forward, backward or sideways. No external moving power is necessary.



▲ ONE-MAN CONTROL Unique design permits one-man control — hydraulically powered—with every facet of dredging operation handled from one control panel.

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Now Ellicott, leading designer and manufacturer of dredges, presents another *first* . . . the new Canal Dredge, designed so ladder and its cutter swing as a unit both vertically *and* horizontally! This and other pioneering developments have enabled Ellicott engineers to build a rugged dredge especially for narrow, shallow waterways—compact enough to handle work a big dredge cannot reach, yet powerful enough to do a variety of jobs. Even the smallest model—6"—has a rated output up to 80 cu. yds. per hr. and can deposit material up to 200 ft. away. Also available in 8", 10" and 12" sizes. Canal Dredges offer fully self-sufficient, one-man operation and their performance is completely guaranteed by Ellicott! For information on Canal Dredge, or any specific dredging problem, write Ellicott Machine Corp., 1603 Bush St., Baltimore 30, Maryland.

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(Continued from page 92)

Blvd., St. Louis, Zone 8, 48 housing units. $717,148. CD 7/31.

Miss., Corinth—HOUSING—Corinth Housing Auth., plans by B. A. England, Corinth; 80 housing units. $800,000.

▲ Neb., Omaha—PARKING—Omaha Parking Auth., City Hall, plans by L. A. Daly Co., archt.-engr., Insurance Bldg., underground parking under court house lawn. $1,000,000. CD 7/16.

▲ Neb., Omaha—NURSES' SCHOOL—University of Nebraska College of Medicine & Hospital, 42nd and Dewey Sts., plans by John Latenser & Sons, 1307 Farnam St., school for nurses. $1,111,855.

▲ N. H., Portsmouth—HOUSING—Portsmouth Housing Auth., plans by John D. Betley, 944 Elm St., Manchester, 124 housing units. $1,800,000. CD 7/14/52.

▲ N. J., Madison—HIGH SCHOOL—Bd. Educ., Madison, plans by Lawrence C. Licht, 19 Knickerbocker Rd., Englewood, high school, 42-acre tract. $2,500,000.

N. J., Upper Saddle River—SCHOOL—Bd. Educ. plans by Lee & Hewitt, 18 Church St., Paterson, 13 room addn. to Bogert School. $525,000.

† N. Y., Amherst—TRAINING CENTER—U. S. Army Engrs., Engineer Park, Buffalo, Zone 7, army reserve training center, N. Forest Rd. $600,000-$800,000.

N. Y., Fulton—SCHOOL—Fulton Bd. Educ., $830,000 bond referendum Dec. 2, James E. Lanihan Elementary School.

▲ N. Y., Ithaca—LABOR INDUSTRIAL RELATIONS—Bureau Contracts & Accounts, The Gov. Alfred E. Smith State Office Bldg., Albany, plans by Coffin & Coffin, 125 E. 46 St., New York, Zone 17, labor industrial relations bldg. at Cornell University. $2,000,000.

▲ N. Y., Olean—SCHOOL—Bd. Educ., Olean, high school. $1,000,000.

▲ N. C., Greensboro—HOUSING—Greensboro Housing Auth., plans by McMinn, Norfleet & Wicker, 2828 Lawndale Dr., 236 housing units. $3,250,000.

▲ N. C., Raleigh—HOUSING—Raleigh Housing Auth., Halifax Court, plans by Wm. Henley Deitrick & Assocs., 115 W. Morgan St., and P. Carter Williams, 133 Fayetteville St., 300 housing units. $3,000,000. CD 1/23.

N. C., Rocky Mount—HOUSING UNITS—Rocky Mount Housing Auth., plans by Thomas, Harles & Shields, Rocky Mount, 200 housing units. Rowland & Simpson, Kinston, consult. engrs. CD 3/5/52.

O., Benton—HIGH SCHOOL—East Holmes Local School Dist., Benton, $678,000 bond election Feb. 5, 1957, schools. $528,000. Bond election Nov. 6 cancelled. CD 8/1.

▲ O., Fremont—SCHOOL—Fremont Bd. Educ., Allen E. Rupp, supt., plans by McLaughlin & Keil, 500 Dominion Bldg., high school. $2,225,000. CD 11/11.

▲ O., Lorain—HOUSING—Lorain Metropolitan Housing Auth., 2153 Lorain Dr., plans by Garfield, Harris, Robinson & Schafer, 1740 E. 12 St., Cleveland, Proj. OH 12-2, 150 housing units. $1,500,000. CD 10/25/49.

Tenn., Cookeville—HOUSING—Cookeville Housing Auth. plans by Wallace & Clemmons, 1911 Division St., Nashville, 58 housing units. $500,000.

Tenn., Gallatin—HOUSING—Gallatin Housing Auth., Gallatin, plans by Thomas L. Clemmons, archt.-engr., 1911 Division St., Nashville, 60 housing units. $600,000. CD 5/9/52.

▲ Tenn., Johnson City—HOUSING—Johnson City Housing Auth. plans by A. H. Abernethy, 403 E. Market St., Johnson City, 100 housing units. $1,159,919. A. E. Bost, 408 Clinch Ave., Knoxville, consult. engrs.

Tenn., Lebanon—HOUSING—Lebanon Housing Auth., Lebanon, plans by Wallace & Clemmons, 1911 Division St., Nashville, Zone 4, 70 housing units. $829,362.

▲ Tenn., Memphis—HOUSING—Memphis Housing Auth., Admin. Bldg., 700 Adams Ave., or P.O. Box 68, Zone 1, plans by Charles S. Peete, 1596 Madison Ave., Tenn., 1-12, 324 housing units, $5,000,000; plans by Eason, Anthony, McKinnie & Cox, 1391 Madison Ave., Tenn., 1-7, 200 housing units, $3,000,000.

▲ Tenn., Springfield—HOUSING—Springfield Housing Auth., plans by Wallace & Clemmons, 1911 Division St., Nashville, 115 housing units. $1,000,000.

Tex., Brownwood—LIBRARY—City, City Hall, plans by Wyatt C. Hedrick, Box 765, Ft. Worth, library alterations, addns., $517,500.

▲ Tex., Hurst-Euless—SCHOOL, etc.—Hurst-Euless Independent School Dist., Hurst, plans by Stanley Brown, 4012 Cedar Springs, Dallas, group of school classrooms, $525,000; elementary school, $525,000. CD 7/10.

▲† Wyo., Cheyenne—HIGHWAY, etc.—Wyoming State Highway Comm., State Office Bldg., plans by Sam C. Hutchings, 1902 Thomes Ave., bldg. to provide petrol offices, highway offices, laboratory, highway shops and parking for 80 cars, located east of Warren Air Force Base. $2,000,000.

Ont., Toronto—SCHOOL—Toronto Bd. Educ., 155 College St., public school, Regent Park, north of Spruce St. between Sackville and Sumach Sts. $680,000.

COMMERCIAL BUILDINGS

Ark., Little Rock—DEPARTMENT STORE—J. C. Penney, Inc., 505 Main St., plans by Erhart, Eichenbaum & Rauch, archts. and consult. engrs., 201 Chester St., replace existing store with 3 story department store bldg., near 6th and Main Streets, $500,000. Work to start in January 1957.

Calif., Santa Cruz—CHURCH, etc.—Congregational Church of Santa Cruz, High St., plans by Leslie S. Nichols, 454 Forest Ave., Palo Alto, frame masonry church, Sunday School and social hall. $600,000.

▲ Ga., Atlanta—DORMITORY, etc.—Emory University, City Office, Candler Bldg., plans by Robert & Co. Assocs., 96 Poplar St., N. W., woman's dormitory, apartment bldg. for married students and central food service bldg. all on the Emory Campus. $3,200,000. CD 9/12.

Ill., Chicago—RESEARCH—Illinois Institute of Technology, 3300 S. Federal, 4 story addn. to metals research bldg. at Armour Research Foundation of Ill. Institute of Technology, at 3350 Federal St. $575,000. Work to start in November. CD 12-1/47.

▲ Ill., Evanston—HOSPITAL, etc.—Lutheran Deaconess Hospital, 1138 N. Leavitt St., Chicago, plans by Burnham & Hammond, 53 W. Jackson Blvd., Chicago, hospital, nurses residence, parking area, Dempster and Western Sts. $4,500,000.

▲ Ind., Indianapolis—OFFICE—Allstate Insurance Co., Skokie, Ill., 1 story, 55,000 sq. ft. office bldg. and 100-car parking lot at Shadeland and E. Washington. $1,000,000. Work to start before end of 1956.

▲ Iowa, Dubuque—SCHOOL—Dubuque Catholic Parishes plans by Durrant & Berquest, 666 Loras Blvd., catholic high school, Kane and Carter Rd. $2,000,000. Bids in March. CD 12/30.

Ky., Covington—SCHOOL, etc.—Catholic Diocese of Covington, Madison Ave., plans by Betz & Bankemper, Scott St., 1 story, bsmnt., brick, store school, chapel, rectory and convent on Dudley Pike. $575,000. (revl) Bids November. CD, 8/29, under LB:

Ky., Lexington—DORMITORY—Transylvania University, 200 W. 3rd St., dormitory. $900,000.

▲ La., Hammond—DORMITORIES, etc.—Southeastern College, Dr. L. H. Dyson, pres., plans by Burk Le Brilate & Lamantern, 632 Pirates Alley, New Orleans, men's dormitory, $475,000; plans by Theo. Pierin & Assocs., 740 Poydras, New Orleans, women's dormitory, $550,000; plans by Riecietta Assocs., 521 Royal, New Orleans, family housing units, $600,000.

Mass., Jamaica Plain—APARTMENT—Cornelius P. Cronin, 241 Columbia Rd., Dorchester, plans by Edward F. Heenan, 73 Tremont St., Boston, 1 story, 72 unit apartment, 21 Pond St. Approx. $500,000.

Neb., Omaha—RECREATIONAL—Owner, c/o J. J. Vinardi, Farm Credit Bldg., recreational bldg., 42nd and B Sts. $760,000.

▲ N. H., Nashua—DORMITORY, etc.—Rivier College, Pres. Sister Adelard Marie, Sisters of Presentation of Mary, 429 Main St.; plans by O. E. Nault & Sons, 48 Hamilton St., Worcester, Mass., dormitory bldg. and library, Main St. $1,000,000. Constr. 1957.

▲ N. J., Clifton—OFFICE—Belmont Housing Development Co., 644 Broad St., Newark, multi-story office bldg., Allwood Rd. and Broad St., off Rte. 3. $1,000,000.

▲ N. J., East Brunswick Twp. (P. O. Old Bridge)—SHOPPING CENTER—Food Fair, Inc., 99 Park Ave., New York, N. Y., 100,000 sq. ft. shopping center to be known as Old Bridge Shopping Center, 1,000 car parking, on Rte. 18. $1,500,000.

▲ N. J., Morristown—APARTMENTS—Wilma Corp., Wm. Shapiro, 2600 Boulevard, Jersey City, plans by Erwin Gerber, 11 Commerce St., Newark, 5 story, 75 unit air conditioned, elevator apartment, to be known as Franklin Hill Apartments, Hill and Franklin Sts. $1,500,000.

▲ N. J., Pequannock (P. O. Pompton Plains)—SHOPPING CENTER—Frank H. Taylor Co., Inc., 520 Main St., East Orange, shopping center, 50-acre tract. $10,000,000.

N. Y., Forest Hills—APARTMENTS—S.A.S. Bldgs. Corp., c/o H. H. Lillien, archt., 201 W. 72 St., New York, Zone 23, 6 story apartment, 71 Rd. and 110 St. $600,000.

▲ N. Y., New York—STUDENT FACULTY CENTER—Fordham University, Fordham Rd., student faculty center, on campus. $3,600,000. CD 11/11/54.

▲ N. Y., New York—GRADUATE SCHOOL—New York University, Washington Square, plans by Seidmore Owings & Merrill, 575 Madison Ave., Zone 22, 10 story, penthouse graduate school of business administration, 96 Trinity Place. $2,250,000. Seelye, Stevenson, Value & Knecht; 101 Park Ave., Zone 17, consult. engrs. CD 10/10/52.

▲ N. Y., New York—HOUSES—United Housing Foundation, Inc., 11 W. 42 St., New York, Zone 36, plans by Skidmore Owings & Merrill, 575 Madison Ave., Zone 22, Seward Park Houses, four 20 story bldgs. on 12+/- acre site bounded by East Broadway, Grand St. and Willett St., Title 1 Proj. for 1,704 units. $21,000,000. Herman J. Jessor, 92 Liberty St., Zone 5, consult. engr.

N. Y., West Seneca—DEPARTMENT STORE—Southgate Plaza, Inc., Union and Seneca Sts., plans by Joseph J. Gregand, 234 Orange St., Buffalo, 1 story, bsmnt., 40,000 sq. ft. steel, concrete, brick block department store, Southgate Plaza for lease to Kobacker's Dpt. Stores. $750,000.

▲ N. Y., Yonkers—APARTMENTS—Syndicate, c/o Harry Silverman, archt., 342 Madison Ave., New York, Zone 17, 140 family apartments, 525 Riverdale Ave. $1,200,000.

▲ O., Beachwood—SHOPPING CENTER—D. A. Visonsi, 1010 Euclid Ave., Cleveland, Zone 15, will not construct 70-80 unit shopping center, Richmond and S. Woodland Rds. due to inability to reach agreement on contract for site. $15,000,000. Project abandoned. CD 11/29.

O., Cleveland—HEADQUARTERS—The Salvation Army, 2304 E. 9 St., Zone 15, 3-4 story headquarters bldg., 3443 Euclid Ave. $600,000. Work start in 2 to 3 years.

O., Elyria—STORE—Robert Hall Clothes, 333 W. 34 St., New York, N. Y., 50,000 sq. ft. store, Rte. 57 and Morgan Ave. $500,000.

▲ Okla., Tulsa—OFFICE, etc.—Well Surveys, Inc., Daniels Bldg., plans by Black & West, Tri State Bldg., office, shops and laboratory for Well Surveys at Independence and Garnett Rds. $1,275,000. CD 2/2.

Pa., Erie—DORMITORY—Gannon College plans by Nelson, Goldberg & Heidt, 1215 G. Daniel Baldwin Bldg., dormitory, $630,000. CD 9/6.

▲ Tenn., Donelson—SHOPPING CENTER—W. H. Criswell, Commerce Union Bank Bldg., Nashville, plans by Hart, Freeland & Roberts, 3rd National Bank Bldg., Nashville, shopping center on 17-acre plot in center of Donelson, Nashville suburb. $2,500,000.

Tex., Amarillo—SHOPPING CENTER—Henry Beverley, 800 W. 5th St., masonry shopping center, 34th and Georgia Sts., $500,000.

Tex., Amarillo—STORE—Sears Roebuck & Co., 917 Polk St., plans by Geo. Dahl, 2101 N. St. Paul St., Dallas, 104,000 sq. ft. masonry department store in Sunset Center. $750,000.

▲ Tex., Beaumont—HOTEL—LaSalle Hotel, c/o Dumas Milner, Beaumont, remodel, expand 250-room hotel. $1,500,000.

Tex., Corpus Christi—MOTEL, etc.—Padre Beach Development Co., c/o Ward McGreedy, c/o Chamber of Commerce, Corpus Christi, 100-unit motel, $400,000; shopping center, $500,000, at Padre Island.

▲ Tex., Houston—HOSPITAL—Methodist Hospital, 6516 Bertner St., plans by Milton McGinty, 2425 Ralph St., doubling existing 300-bed capacity hospital, in Texas Medical Center. $4,000,000.

▲ Tex., Houston—CHURCH—South Main Baptist Church, 200 Colquitt, church constr. program, Main and Colquitt Sts. $1,000,000.

▲ Tex., Houston—SHOPPING CENTERS—Lewis O. Tyra, c/o Irving R. Klein & Assocs., archts., 1317 Austin St., three 1 story, 85,000 sq. ft. masonry bldgs., shopping center, $600,000; 2nd section containing 55,000 sq. ft. masonry shopping center, $400,000.

▲ Utah, Salt Lake City—BUSINESS DEVELOPMENT—Prudential Federal Savings & Loan Assn., Thomas T. Taylor, pres., 125 S. Main St., business development incl. bank, offices, stores, shops, parking space, 33 South and State St. $1,000,000.

Vt., Montpelier—DORMITORIES—Vermont Junior College, College Ave., plans by Sturgis Assoc., Inc., 120 Boylston St., Boston, Mass., dormitory and central hall. Approx. $500,000. Bids in 1 month. A. Ehrenzella, Inc., 329 Washington St., Dorchester, Mass., mech. engr. CD 6/29.

▲ Wis., Superior—SHOPPING CENTER—H. Shanedling & Sons Corp., 2025 Nicolet Ave., Minneapolis, Minn., 12 unit shopping center, "Belknap Plaza," $1,500,000.

▲ Wis., West Allis—SHOPPING CENTER—Wildwood Center, Inc., 4108 W. Forest House Ave., Milwaukee, plans by Victor Gruen & Assoc., 135 S. Doheny Dr., Los Angeles, Calif., shopping center. $21,500,000.

▲ Ont., Toronto—OFFICE—Mutual Benefit Health & Accident Assn. and United Benefit Life Insurance Co., 33 and Farnam Sts., Omaha, Neb., office. $2,000,000.

INDUSTRIAL BUILDINGS

Conn., Milford—FACTORY—Burndy Engineering Co., Inc., Wampus Lane, plans by Leo F. Caproni, 1221 Chapel St., New Haven, 1 story factory addn. for mfg. purposes, $550,000.

▲ Fla., West Palm Beach—PLANT and TEST CENTER—Pratt & Whitney Aircraft Div., United Aircraft, 1 Charter Oak Blvd., West Haven 1, Conn., jet engine plant and test center, east of Lake Okeechobee, Palm Beach Co. $42,000,000.

▲ Ill., Chicago—FACTORY, etc.—Wendnagel & Co., 600 W. Cermak Rd., factory and fabrication yard near O'Hare Field, near here, $1,000,000.

▲ Ill., Peoria—FACTORY—LeTourneau-Westinghouse Co., 2105 W. Adams St., factory adjoining present one, $6,000,000.

▲ Ind., North Judson—FACTORY—Flintkote Co., 30 Rockefeller Plaza, New York, N. Y., factory to make insulrock, over $1,000,000.

Md., Baltimore—PLANT, etc.—Westinghouse Electric Corp., 2519 Wilkins Ave., 2 story plant and laboratory at Air Arm Div. $700,000.

Mass., Auburn—FACTORY—Lodding Engineering Corp., 43 Beacon St., Worcester, plans by Doak Martin, 8 Norwich St., Worcester, 55,000 sq. ft. factory and office bldg. Approx. $550,000.

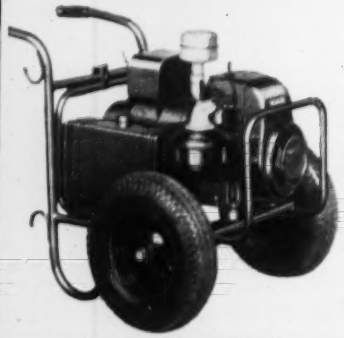
▲ Minn., St. Paul—INDUSTRIAL CENTER—W. Capp Mfg. Co., 1143 Dupont Ave. N., Minneapolis, industrial center "Midway Industrial Center" on Vandalia St., 3 blocks north of University Ave., to provide warehousing, distributing and light mfg. facilities, $3,000,000. Mayeron Eng. Co., St. Louis Park, consult. engr. CD 11/21.

Minn., St. Paul—CANNING—J. Schmidt Brewing Co., 827 West 7th St., constr. addn. canning and bottling facilities at site, $500,000.

▲ Mo., Pleasant Hill—POWER PLANT—Missouri Public Service Co., Warrensburg, power plant, Ralph Green Generating Station, $3,750,000.

▲ N. J., Freehold—FACTORY, etc.—Ironton Varnish Co., Minnesota Mining & Mfg. Co., St. Paul, Minn., 6 Argyle Terrace, Irvington, 1 story, brick factory and offices on 110 acre tract, Jones Siding Rd. and Asbury Ave. Approx. $1,500,000.

KOHLER
ELECTRIC PLANTS for independent power, anywhere, any time



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KOHLER OF KOHLER

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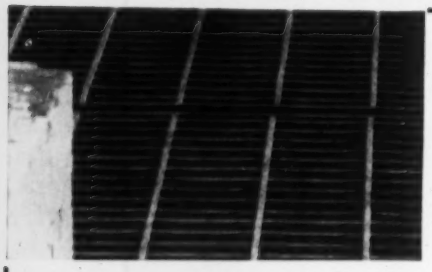

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▲ N. Y., Grand Island—RESEARCH LABORATORY—Hooker Electrochemical Co., Niagara Falls, N. Y., central research laboratory, $1,500,000.

▲ N. Y., Massena—PLANT—Reynolds Metals Co., 3d and Grace Sts., Richmond, Va., aluminum reduction plant, near here, $100,000,000.

▲ O., Elmore—FACTORY—Brush Beryllium Co., 4301 Perkins Ave., Cleveland, Zone 3, factory for production of beryllium and beryllium copper alloy, $4,500,000.

▲ Okla., Muskogee—PLANT—Fansteel Metallurgical Corp., 3304 N. Harlem Ave., Chicago, Ill., tantalum plant, near here, $6,500,000.

▲ Pa., Fallsington—PLANT—Kelsey Hayes Wheel Co., 3600 Military Ave., Detroit, Mich., manufacturing plant, $2,000,000.

▲ Pa., Franklin—PLANT—Hammermill Paper Co., 1442 East Lake St., Erie, plant, constr. depends on Pa. State Hy. Dpt. constr. road, $2,000,000.

▲ Pa., Midland—LABORATORY—Remi-Cru Titanium, Inc., (Remington Arms Co., Inc., and Crucible Steel Co. of America), Midland, research laboratory and administration offices, Industry Twp., 5 mi. northeast of here, to exceed $1,000,000.

S. D., Volga—PLANT—Volga Farmers Coop. Creamery, Volga, milk drying plant, $500,000.

▲ Tex., Dumas—PLANT—Shamrock Oil & Gas Co., 1st Natl. Bank Bldg., Amarillo, isobutane-thermo cracking gas plant unit, $1,000,000; steel tank farm expansion, $90,000. CD 8/7.

UNCLASSIFIED

▲† Arizona—PARK BUILDINGS, etc.—National Park Service, Dpt. Interior, 19 and C Sts. N. W., Wash. 25, D. C., buildings and utilities, $1,823,000; roads and trails, $1,104,000, Organ Pipe Cactus National Monument.

▲† Arizona—PARK ROADS, etc.—National Park Service, Dpt. Interior, 19 and C Sts. N. W., Wash. 25, D. C., roads and trails, $408,000; buildings and utilities, $1,121,000, Petrified Forest National Monument.

▲† Arizona—PARK ROADS, etc.—National Park Service, Dpt. Interior, 19 and C Sts. N. W., Wash. 25, D. C., roads and trails, $725,000; buildings, utilities, $570,000, Canyon de Chelly National Monument.

† Arizona—PARK ROADS, etc.—National Park Service, Dpt. Interior, 19 and C Sts. N. W., Wash. 25, D. C., roads and trails, $126,000; buildings and utilities, $503,000, Coronado National Monument.

▲† Arizona—PARK ROADS, etc.—National Park Service, Dpt. Interior, 19 and C Sts. N. W., Wash. 25, D. C., roads and trails, $753,000; buildings and utilities, $496,000, Navajo National Monument.

▲† Arizona—PARK ROADS, etc.—National Park Service, Dpt. Interior, 19 and C Sts. N. W., Wash. 25, D. C., roads and trails, $2,740,000; buildings and utilities, $399,000, Saguaro National Monument.

▲† Arizona—PARK ROADS, etc.—National Park Service, Dpt. Interior, 19 and C Sts. N. W., Wash. 25, D. C., roads and trails, $433,000; buildings and utilities, $768,000, Sunset Crater National Monument and Wupatki National Monument. CD 3/6.

Conn., Hartford—STADIUM, etc.—City, City Hall, stadium, field house, track and skating rink, North Meadows, $500,000. Wilfred W. DeMay, city engr.

▲† Georgia—PARK BUILDINGS, etc.—National Park Services, Dpt. Interior, 19 and C Sts. N. W., Wash. 25, D. C., buildings and utilities, $414,000; roads and trails, $1,218,000, Kennesaw Mountain National Battlefield Park.

▲ Ill., Chicago—STREET LIGHTS—City, Div. Streets & Sanitation, Lloyd N. Johns, comr., City Hall, bond election Nov. 6, street lights, $25,000,000. CD 11/6/53.

▲† Maine—RADIO STATION—Dist. P. Wks. Office, First Naval Dist., 495 Summer St., Boston, Mass., Naval Radio Station, utilities and land acquisition, $2,450,000.

▲ Md., Baltimore—OFF-STREET PARKING FACILITIES—City, Bureau Bldg. Constr., 410 Municipal Bldg., Zone 2, bond election Nov. 6, off-street parking facilities, $5,000,000.

▲ Mass., Taunton—SPORTS ARENA—Taunton Greyhound Assoc., Inc., Joseph Lussey, pres., Williams St., dome covered sports arena, $2,000,000. Linenthal & Becker, 16 Lincoln St., Boston, consult. engrs.

▲ Missouri—RURAL DISTRIBUTION LINES—Ozark Border Electric Co-operative, Poplar Bluff, 180 mi. electric distribution line and system impvs., $1,400,000. CD 8/10/50.

▲ Nebraska—RURAL DISTRIBUTION LINES—Southwest Public Power Dist., Palisade, rural distr. lines, Hitchcock Co., $1,185,000. Flora Eng. Co., 56 and Holly St., Box 234, Denver, Colo., consult. engr. CD 9/12.

▲ Nebraska—RURAL DISTRIBUTION LINES—York County Rural Public Power Dist., York, 319 mi. rural distr. line, 15 mi. 69 kv. transmission line and general sys. impvs., York Co., $2,050,000.

North Carolina—RURAL DISTRIBUTION LINES—Edgecombe-Martin County Electric Membership Corp., Tarboro, 10 mi. rural distr. lines, sys. impvs., Edgecombe Co., $500,000.

▲ Ont., Toronto—PARK PROGRAM—Municipality of Metropolitan Toronto, 67 Adelaide St. E., park program, Toronto Islands, $14,500,000. Marshall, Macklin & Monaghan, 154 Merton St., consulting engineers to prepare topographic plan of the islands.

Steel for the Senators

The Capitol dome provides an imposing backdrop for Bethlehem ironworkers erecting steel for the additional Senate Office Building. Completion of the new structure with its 329 office rooms will mean larger office suites for Senate members. Other much-needed facilities to be provided include committee hearing rooms, a 500-seat auditorium, a spacious cafeteria, a parking garage and gymnasium.

E-shaped in plan, the building is seven stories high, plus a basement and sub-basement, and totals 392,000 sq ft in floor area. Its white marble exterior and over-all architectural design are in harmony with other government buildings.

Location of the new building is just across First Street from the existing Senate Office Building, between Constitution Avenue and C Street, only a short stroll from the Capitol.

Architect: J. George Stewart, Architect of the Capitol; Associate Architect: Otto R. Eggers; General Contractor: The George Hyman Construction Co.

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

October 1 Connecticut October 2, 16 Massachusetts

STREETS AND ROADS

October 1 Connecticut October 2 Massachusetts

▲† **Mass., Falmouth**—STORAGE FACILITIES—BA On Or About 10/16—U. S. Eng., 150 Causeway St., Boston, Zone 14, addnl. storage facilities for ordnance storage area, incl. 7 concrete storage magazines, assembly and check-out bldg., security guard house, utilities, Otis Air Force Base, ENG-19-016-57-65, $1,500,000-$1,750,000. Plans deposit $25. CD 8/21.

HEAVY CONSTRUCTION—LB & CA

▲ **MAINE**—State Hy. Comn., State House, Augusta, Me.—**W. H. Hinman, Inc.**, North Anson, Me. CA $1,480,495. (3 bidders) c. conc., b. conc. 2.824 mi., 3 bridges, F.A. Projs. Nos. (N-01-1(15) and ING-01-1(16), U.S. 1, Freeport, CD 3/28;

Me.—**Forest Frederick**, Pittsfield, Me. CA $230,976. (3 bidders) b. conc. 2.319 mi., F.A. Secondary Proj. S. 0315 (3), "157" East, Millinocket-Medway. Bids Sept. 12.

▲† **The Lane Constr. Corp.**, Drawer 911, Meriden, Conn. CA $1,168,728, est. $1,209,737. National Guard taxiway and parking apron, Otis Air Force Base, ENG-19-016-57-20, FALMOUTH, MASS. U. S. Eng., 150 Causeway St., Boston, Mass. CD 8/27, under LB.

BUILDINGS—LB & CA

▲ **George A. Fuller Co.**, 11 Beacon St., Boston, Mass. CA Approx. $1,500,000. LIBRARY, WELLESLEY, MASS. Wellesley College, Wellesley, Mass. CD 2/23/55.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

October 9 New Jersey

STREETS AND ROADS

October 2 Maryland October 11 Pennsylvania

▲† **New York**—BA 10/11—U. S. Eng., Engineer Park, Niagara and Bridge Sts., Buffalo, Zone 7, constr. Grasse River lock approach channel in St. Lawrence Seaway, St. Lawrence River for St. Lawrence Seaway Development Corp., CIVENG-30-021-56-71. CD 8/27.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—State Dpt. P. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany,

N. Y.—**D. W. Winkleman Co., Inc.**, 205 Harrison St., Syracuse, N. Y. CA $5,721,391. paving, structural work on State Fair Blvd. and Rte. 48, west side Onondaga Lake, Onondaga Co.;

N. Y.—**H. L. Baughman, Inc.**, 1240 Jefferson Rd., Rochester, N. Y. CA $1,090,312. portion of Rte. 17 incl. new bridge and interchange, Elmira, Chemung Co.;

N. Y.—**Draicchio & Caradori Co., Inc.**, 3 Lombardy St., Lancaster, N. Y. CA $1,777,641. relocation and reconstr. section of Rte. 14A and reconstr. of Rte. 54, Yates Co. Grand total $8,589,344. CD 9/18, under LB.

▲ **Hendrickson Bros.**, 63 N. Central Ave., Valley Stream, N. Y. CA $2,837,205. (1 bidder) Contr. No. 1002-2-NHP-3, lateral sewers, Lake Success-Herricks area, town of North Hempstead, Sewage Collection Dist., No. 2-NHP, MINEOLA, N. Y. County Executive, Nassau Co., Old County Court House, Mineola, N. Y. CD 821, under LB.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 N. Office Bldg., Harrisburg,

Pa.—**Hempt Bros.**, R. D. 1, Camp Hill, Pa. LB $1,230,282. (6 bidders) three span concrete bridge to carry Rte. 15 over Rte. 94 with suitable ramps constructed to permit access from town of York Springs into the new route, four-lane rein.-con. pavement with earth and concrete divisor, 3.36 mi., relocation between Deardorffs Mills and Heidlersburg, U. S. Rte. 15, Adams Co.;

Pa.—**David Goldberg & Sons**, Pennsylvania Ave., Uniontown, Pa. LB $203,670. (4 bidders) repairing, reconstr. existing bridge over Monongahela River at Masontown, 0.27 mi. T.R. 21, Fayette and Greene Counties;

Pa.—**Jos. Futch Constr. Co., Inc.**, 220 Trayor St., Exeter, Pa. LB $160,524. (4 bidders) constr. plate girder bridge over Lackawanna River in Old Forge Boro, 0.06 mi., L.R. 40103, Lackawanna Co.;

Pa.—**Blue Mountain Constr. Co.**, Grantville, Pa. LB $127,960. (7 bidders) two bridges over Swiftwater Creek east and west of Swiftwater, 0.08 mi., T.R. 940 and 611, Monroe Co.; LB $103,532. (5 bidders) two bridges over Buckhill Creek and tributary of Buckhill Creek, southwest of Coveville, 0.2 mi., L.R. 45070, Monroe Co.;

Pa.—**G. H. Litts**, R. D. No. 2, East Stroudsburg, Pa. LB $136,734. (4 bidders) constr. 3 bridges, two over Pocono Creek, northwest of Tannersville and one over Bulgers Run, southeast of Tannersville, L.R. 45081 and 45024, Monroe Co. Bids Sept. 14. CD 8/23.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 N. Office Bldg., Harrisburg,

Pa.—**Worthington Constr. Co.**, Box 95, Line Lexington, Pa. LB $1,418,775. (11 bidders) rein.-con. 24 ft. wide on each side of an earth 20 ft. wide, 2.57 mi., two prestressed precast rein-con. bridge, constr., relocation of twp. roads and service roads from near Berks-Lehigh Co. line west to intersection of L.R. 06136 in Greenwich, Maxatawney and Weisenberg Twps., Berks and Lehigh Counties;

Pa.—**James D. Morrissey, Inc.**, 9119 Frankford Ave., Phila. 14, Pa. LB $524,341. (9 bidders) flexible base with bit. surf., 50 ft., 24 ft., 36 ft., relocation of U.S. Rte. 13 which connects Tullytown and Levittown with Morrisville and Yardley, west of Morrisville for a distance 2.13 mi., Falls and Lower Makefield Twps., L.R. 778, Bucks Co.;

Pa.—**A. E. Oblock**, Unity, Pittsburgh 35, Pa. LB $352,689. (8 bidders) c.-conc. pavement 24 ft. wide, two channelized hy. intersections consisting of rein.-con., one rein.-con. arch bridge, wid'n. existing pavement with separating traffic islands and median areas, Sandy Twp., near DuBois, 1.49 mi. from intersection of L. R. 60 and 338, northeast T.R. 322, Clearfield Co.;

Pa.—**Union Paving Co.**, No. 1 East Wynnewood Rd., Wynnewood, Pa. LB $215,515. (6 bidders) surf. existing pavement with bit. surf. 43 to 117 ft. in width, 1.35 mi. Delaware Ave. and Dyott and Norris Sts., city of Philadelphia, L.R. 67047, Philadelphia Co. Bids Sept. 14. CD 8/23.

▲ **MARYLAND**—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,

Md.—**Wright Contg. Co.**, Odenton, Md. LB $2,617,438. (5 bidders) surf. 6.255 mi. divided hy. US 240 M-533-1-320 and M-485-2-320, Montgomery Co.;

Md.—**Williams Contg. Co.**, Box 145, Baltimore 20, Md. LB $1,959,769. (3 bidders) surf. 3.571 mi. State Rte. 139, incl. intersection and connecting roadways, B 678-1-420, Baltimore Co. Bids Sept. 18. CD 9/5.

BUILDINGS—LB & CA

▲ **George A. Fuller Co.**, 597 Madison Ave., New York, N. Y. CA Est. $75,000,000. 46 story, glass, metal OFFICE with sub-basement GARAGE and helicopter landing at Park and Lexington Aves., 53 and 54 Sts., NEW YORK, N. Y. Vincent Astor, 152 W. 42 St., New York, N. Y.; Carson & Lundin, 50 Rockefeller Plaza, New York, N. Y., archts.

▲ **W & Z Builders**, 57 Bryant Ave., Bloomfield, N. J. CA Est. $1,000,000. 50 HOMES to be known as "Jamesburg Gardens", Buckley Ave., Monroe Twp., JAMESBURG, N. J. Ralph R. Zarra, 57 Bryant Ave., Bloomfield, N. J. Edwin Gerber, 11 Commerce St., Newark, N. J., archt.

▲ **B. J. Lucarelli Co., Inc.**, 22 Orchard St., Jersey City, N. J. CA, $1,000,000. MFG. PLANT addn., LIVINGSTON, N. J. Chatham Electronics Div., The List Industries Corp., 630 W. Mt. Pleasant Ave., Livingston, N. J. Engineers Co., Inc., 487 Orange St., Newark, N. J., engr.

▲ **Curley Homes Inc.**, 54 Broad St., Red Bank, N. J., Owner Builds, $3,000,000. 90 HOMES, Holland and Red Hill Rds., MIDDLETOWN, N. J. Ralph Fournier, 9929 Manchester St., St. Louis, Mo., archts.

▲ **Milton Hartmann**, Jockey Hollow Estates, Western Ave., Morristown, N. J., Owner Builds. $3,600,000. 250 HOMES, Jockey Hollow Section, Jockey Hollow Estates, MORRISTOWN, N. J. Donald S. Rotwein, 94 Van Ness Court, Maplewood, archt.

▲ **Urban Redevelopment Corp.**, 83 Paterson St., New Brunswick, N. J., Owner Builds. $12,000,000. SHOPPING REDEVELOPMENT, incl. retail shops, department store, 100-room hotel, auditorium, office and parking areas called "Plaza Center" adjoining Housing Authority Development at George St. and Memorial Park, NEW BRUNSWICK, N. J. Terrano & Gardner, 35 W. 53 St., New York, N. Y., archts. D. Dodd McHugh, 23 E. 26 St., New York, N. Y., engr.

▲ **Calabro Constr. Co. Inc.**, 401 Park Ave. S., Linden, N. J. CA Est. $1,000,000. PLANT and OFFICE, E. Meadow Ave., RAHWAY, N. J. Regina Corp., 39 Central Ave., Newark, N. J. The J. & E. Warn, 2335 Florence St., Cincinnati, O., archts. Awarded Sept. 12.

▲ **Mullan Contg. Co.**, 3945 Greenmount Ave., Baltimore 18, Md. LB $2,760,000. Arbutus Junior High SCHOOL, Arbutus, TOWSON, MD. Baltimore Co. Bd. Educ., Aigburth Rd., Towson, Md. Bids Sept. 18. CD 9/12.

▲ **E. L. Daniels**, 1511 N. Quincy St., Arlington, Va., LB $2,008,084, est. $1,000,000. (5 bidders) 5 story Columbia HOSPITAL for Women addn., WASH., D. C. Columbia Hospital for Women, 25 and L Sts. N.W., Wash., D. C. Bids Sept. 18. CD 8/9.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

October 5 Tennessee

STREETS AND ROADS

October 5 Tennessee

▲† **Georgia and South Carolina**—BA About 1/18—U. S. Eng., 200 E. St. Julian St., Savannah, Ga. Hartwell Dam and appurtenant works, Hartwell Proj., Savannah River, near Hartwell, $10,000,000 appropriated 1956. CD 9/14/55.

BUILDINGS—BA

▲ **Ga., Savannah**—HOUSING—BA 1/15—Housing Authority of Savannah, 200 E. Broad St., 337 housing units, $3,000,000. Levy & Kiley, 410 E. Bay St., archts.

HEAVY CONSTRUCTION—LB & CA

▲† **McWilliams Dredging Co.**, Box 584, New Orleans, La. LB $1,176,363. (4 bidders) Whiskey Bay Pilot Channel extension, consisting of 7,257,000 cu. yd., St. Martin and Iberville Parishes, Inv. 57-46, LOUISIANA. U. S. Eng., foot of Prytania St., New Orleans, La. Bids Sept. 13. CD 9/5.

▲† **Lewis Constr. Co. & Assoc.**, Box 16, Goldsboro, N. C. CA $1,002,635, est. $1,066,269, (7 bidders) control tower and outlet works Buckhorn Reservoir, Perry Co., CIVENG-15-029-56-8, KENTUCKY. U. S. Eng., 830 W. Broadway, Louisville, Ky. Bids Sept. 11, awarded Sept. 13. CD 9/14, under LB.

BUILDINGS—LB & CA

▲ **Del E. Webb Constr. Co.**, S. 23 Ave., Phoenix, Ariz., CA, Est. $1,800,000. HOTEL, Hollywood and Highland Blvds., HOLLYWOOD, FLA. Flamingo Hotels, Inc., 2501 E. Van Buren St., Phoenix, Ariz.

▲ **Bush Housing Corp.**, Flat Iron Bldg., Norfolk, Va., CA, $3,789,000. 370 APARTMENT UNITS, Capehart Housing, Redstone Arsenal, HUNTSVILLE, ALA. U. S. Eng., 2301 Grant St., Mobile, Ala. Bids June 27, awarded Sept. 14. CD 7/3, under LB.

▲† **J. A. Jones Constr. Co.**, 133 Ellis St. N.E., Altanta, Ga., CA $1,109,484. structural FABRICATION BLDG. addn., Redstone Arsenal, HUNTSVILLE, ALA. U. S. Eng., 2301 Grant St., Mobile, Ala. CD 8/29.

▲ **Struck Constr. Co.**, 147 N. Clay St., Louisville, Ky. CA $2,500,000. (7 bidders) MANUFACTURING BLDG. BOILER ROOM, paving, LEXINGTON, KY. Square D Co., 6060 Rivard St., Detroit, Mich. Bids Aug. 28, awarded Sept. 18. CD 8/24.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

October 3 Michigan

STREETS AND ROADS

October 2 Ohio October 3 Michigan

BUILDINGS—BA

▲ **O., Cincinnati**—GARAGE, etc.—BA 10/30—City, City Hall, garage, storage depot, pipe yards for Water Works Dpt. $2,800,000. Plans deposit $40. Woodie Garber & Assoc., 104 Wm. Howard Taft Rd., archts. Hixon, Tarter & Assoc., 2320 Victory Parkway, structural engrs., Bodenstein & Schuster, 9th and Main Sts., consult. engrs. CD 7/29/55.

BUILDINGS—LB & CA

▲ **H. L. Vokes Co.**, 1000 Wayside Rd., Cleveland 19, O. CA $2,000,000. design and construct 6 story approx. 50,000 sq. ft. OFFICE, 2800 Euclid Ave., CLEVELAND, O. Halley H. Lipp, 2829 Euclid Ave., Cleveland 15, O. Awarded Aug. 27.

▲ **George A. Fuller Co.**, 1st Natl. Bank Bldg., Pittsburgh, Pa., CA (8 bidders) general constr. LAMP DEVELOPMENT LABORATORY, Nela Park Works, CLEVELAND, O. Total est. $4,000,000-$5,000,000. General Electric Co., River Rd., Schenectady, N. Y. Bids Aug. 31. CD 8/14;
Smith & Oby Co., 6107 Carnegie St., Cleveland, O., CA mechanicals (Cleveland, O.);
Hatfield Electric Co., 3855 Carnegie St., Cleveland, O., CA electrical (Cleveland, O.).

▲ **A. W. King Co.**, 5301 E. Outer Dr., Detroit, Mich. Owner Builds. $4,750,000. Harper Beach Subdivision, 303 brick HOUSES, CLINTON, MICH.

▲ **School Dist. 97**, 122 Forest Ave., Oak Park, Ill., rejected bids Aug. 9, Longfellow Grade SCHOOL addn., 315 Jackson Blvd., OAK PARK, ILL. LB $1,046,902. CD 8/21, under LB.

▲ **Miller-Davis Co.**, 1029 Portage St., Kalamazoo, Mich., CA $1,249,000. DORMITORIES, Ferris Institute, BIG RAPIDS, MICH. State, Clair Taylor, secy., State Bd. Educ., Capitol, Lansing, Mich. CD 8/30, under LB.

▲ **Christman Co.**, 408 Kalamazoo Plaza, Lansing, Mich., CA $2,961,507. general constr. self-liquidating HOUSING for married students, Michigan State University, EAST LANSING, MICH. Michigan State University, Karl D. McDonel, secy., East Lansing, Mich. CD 8/21, under LB.

▲ **Rose-Hill Realty Co.**, 17300 Grand River St., Detroit, Mich. Owner Builds. $1,700,000. Pleasant Acres, 100 brick ranch HOMES, 10 Mile and Marilyn Rds., WARREN, MICH.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

October 2 Iowa October 9 Kansas

STREETS AND ROADS

October 2 Iowa October 9 Kansas

(Continued on page 100)

THE WELDER KNOWS he's getting the exact fitting specified on the blueprint because the fitting is clearly marked with all designations.

COMPLETE... PERMANENT IDENTIFICATION!

THE STOREROOM WORKER KNOWS he is selecting the right fitting when it's marked "TUBE-TURN". The fitting bears complete information called for on the requisition.

THE DESIGNER KNOWS that his specifications will be carried out precisely where his drawings call for "TUBE-TURN products". At every stage . . . from purchasing to pipe installation, people KNOW what they're getting and using.

CLEARLY MARKED. TUBE-TURN® Welding Fittings are completely identified as to dimensional and metallurgical facts. Here is your assurance that you have the RIGHT fitting, and that it has passed Tube Turns' rigid inspection and quality control.

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Write for complete details and prices. Ask for the complete Servicised Catalog.

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6051 W. 65th ST., CHICAGO 38, ILL.

(Continued from page 98)

▲† **Missouri**—BA 10/16—U. S. Eng., 1800 Federal Office Bldg., 911 Walnut St., Kansas City 6, Mo., constr. embankment, channel excav., access roads, Stage 1 Pomme de Terre Dam and Reservoir, near Hermitage, ENG-57-25, $1,000,000-$2,000,000. CD 9/12.

▲ **Tex., Galveston**—BA 10/16—Bd. Navigation & Canal Comrs., Galveston County Navigation Dist. No. 1, City Hall, Contr. 3, Pelican Island Causeway bridge over Galveston Channel, $4,500,000. Parsons, Brinckerhoff, Hall & Macdonald, Bankers Mortgage Bldg., Houston, engrs. CD 12/9/54.

BUILDINGS—BA

▲ **Neb., Omaha**—CONSTRUCTION CENTER—BA 10/16—Metropolitan Utilities Dist., 18 and Harney Sts., 1 story, 300x400 ft. brick, rein.-conc. construction center, 63 and Oak Sts. $1,350,000. Steele, Michael & Durham, 2962 Harney St., archts.-engrs. CD 10/4/51.

▲ **Tex., San Angelo**—HIGH SCHOOL—BA 11/15—San Angelo Independent School Dist., San Angelo, high school, $2,380,000. Plans deposit $50. Caudill, Rowlett, Scott & Assocs., 425 S. Main St., Bryan, archts.

BUILDINGS—SLC

▲ **Tex., Beaumont**—SHOPPING CENTER—Gateway Shopping Center, c/o Irving R. Klein & Assocs., archts., 1317 Austin St., Houston, soon lets contract, shopping center, $2,500,000. Walter P. Moore, 2 Pinedale St., and J. Wayne Holland, 4209 Leeland St., Houston, engrs. CD 9/5.

HEAVY CONSTRUCTION—LB & CA

▲ **H. J. Hoppel**, 5501 E. Admiral St., Tulsa, Okla., LB $1,112,440, est. $1,195,000. Mingo Valley sewage treatment plant, Cont. SA-55-6, TULSA, OKLA. City, City Hall, Tulsa, Okla. Bids Aug. 28. CD 8/2.

BUILDINGS—LB & CA

▲ **Barbarossa & Sons**, St. Cloud, Minn., and **Nodlund Constr. Co.**, Alexandria, Minn., LB $1,289,190. (3 bidders) Sect. A, sanitary sewers, Trunk Sewer Imprvt. No. 3, GOLDEN VALLEY (P. O. MINNEAPOLIS), MINN. Village, R. W. Owens, clk., **Golden Valley**, Minn. Bids Sept. 14. CD 8/28.
Lametti & Son, 211 N. Pascal St., St. Paul, Minn., LB $266,970 (4 bidders) Sect. B, sanitary sewers, Trunk Sewer Imprvt. No. 3 (Golden Valley, Minn.).

▲ **Normandy School Dist. Bd. Educ.**, Ward E. Barnes, supt. Schools, 7837 Natural Bridge Rd., Normandy 21, Mo., rejected bids Aug. 29, 3 story, brick, steel concrete, masonry SENIOR HIGH SCHOOL, St. Charles Rock and Lucas and Hunt Rds., NORMANDY (ST. LOUIS 21 P. O.), MO. CD 9/7, under LB.

▲ **Baukol Constr. Co.**, 901 N. 6 St., Grand Forks, N. D. CA Est. $1,000,000. multiple DWELLING PROJ., GRAND FORKS, N. D. Arrowhead Properties, Inc., c/o Wells & Denbrook, archts., 1701 Cherry St., Grand Forks, N. D.

▲ **Worth Builders**, Box 6490, Fort Worth, Tex. CA $1,680,670. construct and finance, Capehart family HOUSING, Gray and Killeen Air Force Bases, ENG-41-443-56-83, KILLEEN, TEX. U. S. Eng., 100 W. Vickery Blvd., Fort Worth, Tex. Bids July 17. CD 7/23, under LB.

▲ **Jack Dempsey & Bobby Manziel**, Tyler, Tex. cancelled bids, SPORTS AUDITORIUM, TYLER, TEX. Est. $1,000,000. CD 1/31.

▲ **Southwestern Engineering Co.**, 5000 District Blvd., Los Angeles, Calif. CA Est. $8,000,000-$10,000,000. design and construct REFINERY, incl. installation, composed of fluid catalytic cracker, H. F. alkylation plant and a platformer, GALLUP, N. M. El Paso Natural Gas Products Co., E. P. N. G. Co. Bldg., El Paso, Tex. CD 4/26.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
October 4 Nevada — October 17 California

STREETS AND ROADS
October 4 Nevada — October 9 Washington
October 17, 18, 24 California

BUILDINGS—BA

▲ **Wash., Tacoma**—HOUSING—BA 10/16—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, 110 to 150 unit family housing, McChord Air Force Base, Inv. 57-30. Plans deposit $50. Extended date. CD 8/23.

HEAVY CONSTRUCTION—LB & CA

▲ **Butler Constr. & Eng. Co.**, 4414 15 Ave. S.W., Seattle, Wash., CA $1,919,705. Broad St.-Aurora Ave. underpasses, SEATTLE, WASH. City, County-City Bldg., Seattle, Wash. Bids Sept. 5, awarded Sept. 12. CD 9/10, under LB.

▲ **Guy F. Atkinson Co.**, 10 W. Orange Ave., South San Francisco, Calif., CA $8,288,429. dam on North Clackamas River and plant addn. at Faraday, Clackamas Co., OREGON. Portland General Electric Co., 621 S.W. Alder St., Portland, Ore. Awarded Sept. 14. CD 8/22, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento.
Charles L. Harney, Inc., 575 Berry St., San Francisco, Calif., CA, $1,583,505. grading, paving 2 mi. Bayshore Freeway from Willow Road in Menlo Park to San Mateo-Santa Clara Co. line incl. 4 bridges, San Mateo Co. Bids Aug. 29, awarded Sept. 11. CD 9/4.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles.
Fredericksen & Kasler, 212 13 St., Sacramento, Calif., CA, $3,435,889. grading, paving, structure, 5 bridges, 2 pedestrian undercrossing, 1 pedestrian overcrossing on U.S. 101, Los Angeles Co. Bids Aug. 30. CD 9/7, under LB.

▲ **Baker-Anderson Corp.**, 12420 Bloomfield St., Norwalk, Calif., LB $4,930,000, est. $4,500,000. (6 bidders) North Central outfall sewer Section A and Section B, Unit II, LOS ANGELES, CALIF. Bd. P. Wks., City Hall, Los Angeles, Calif. Bids Sept. 12. CD 9/10.

▲ **Ukropina-Polich-Kral**, 201 E. Las Tunas Dr., San Gabriel, Calif., LB $1,415,377. Sch. I and II, 6.9 mi. 42- to 60-in. Pomona-Walnut-Rowland water pipe line, POMONA, CALIF. Pomona-Walnut-Rowland Joint Water Line Comm., 597 S. Thomas St., Pomona, Calif. Bids Sept. 11. CD 8/27.

BUILDINGS—LB & CA

▲† **J. H. Wise & Sons, Inc.**, Box 267, Boise, Idaho, LB $2,643,000 (7 bidders). 150x285 ft. ASSEMBLY and MAINTENANCE BLDG. addn., Aircraft Nuclear Propulsion area of National Reactor Testing Station Proj. AT (10-1-837), ARCO, IDAHO. Atomic Energy Comm., Idaho Operations Office, Idaho Falls, Idaho. Bids Sept. 12. CD 8/20.

▲ **Westinghouse Electric Corp.**, 3 Gateway Center, Pittsburgh, Pa., CA, Total est. $50,000,000. 75,000 kw. generating UNIT, TUCSON, ARIZ. Tucson Gas, Electric Light & Power Co., 35 W. Pennington St., Tucson, Ariz.

▲ **Fluor Corp. Ltd.**, 2500 Atlantic St., Los Angeles, Calif., CA Est. $3,000,000. design and construct, 25,200 bbl. per day RESIDUUM STRIPPER at refinery, EL SEGUNDO, CALIF. Standard Oil of California, 225 Bush St., San Francisco, Calif. CD 8/18/52.

▲ **A. J. Wutzke**, 20252 E. Chapman St., Orange, Calif., CA $1,500,000. 125 DWELLINGS, Tract 2518, GARDEN GROVE, CALIF. B & F Builders, Inc., 11146½ E. Whittier Blvd., Whittier, Calif.

▲ **Pacific Coast Builders**, 1 South Park St., San Francisco, Calif., LB $3,038,000 (6 bidders) 1 story, 156,000 sq. ft. new Tennyson HIGH SCHOOL, HAYWARD, CALIF. Hayward Union High School Dist., 22300 Foothill Blvd., Hayward, Calif. Bids Sept. 12. CD 8/21.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
October 10 British Columbia

BUILDINGS—BA

▲ **Alta., Calgary**—TOLL—BA 10/9—Alberta Govt. Telephones, 9718 107 St. Edmonton, 8 story bsmnt., 130x150 ft., steel, concrete toll bldg. $2,500,000. Plans deposit $200.

HEAVY CONSTRUCTION—LB & CA

▲ **C. A. Parsons of Canada**, Royal Bank Bldg., Toronto, Ont., CA, $3,663,700. steam generators for steam generating plant east side of Red River, Selkirk, MANITOBA. Manitoba Hydro-Electric Bd., 213-219 Notre Dame Ave., Winnipeg, Man. Awarded Sept. 11.

▲ **Poole Constr. Co. Ltd.**, 10503 104 St., Edmonton, Alta., CA $1,500,000 dam on Long Creek just north of North Dakota border and near Estevan, SASKATCHEWAN, Saskatchewan Power Corp., 1379 Cornwall St., Regina, Sask. Bids Aug. 16. CD 8/8.

BUILDINGS—LB & CA

▲ **J. Gordon Turnbull Inc.**, Brent Bldg., Regina, Sask., CA, Est. $3,500,000. design and construct steel PIPE PLANT, REGINA, SASK. Prairie Pipe Co. Ltd., c/o Fluor Corp. of Canada Ltd., c/o General Delivery, Regina, Sask. Awarded Sept. 5. CD 10/6.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

▲ **Rosson-Richards Constr. Co.** and **Brown & Root, Inc.**, 4100 Clinton Dr., Houston, Tex., U.S.A. CA $21,000,000. 177 mi. 20 in. gas pipe line from LaPaz field to refinery at Cardon, VENEZUELA. Cia. Shell de Venezuela, Edificio Shell, San Bernardino, Caracas, D. F., Venezuela. CD 7/11.

▲ **Velutini & Bergamin**, Sociedad a Camejo 16, Caracas, D. F., Venezuela, CA $2,545,092. 2/5 mi. sect. Avenue of the Armed Forces, incl. cloverleaf, three split-level crossings and bridge over Guaire River, CARACAS, VENEZUELA. Ministry P. Wks., Caracas, Venezuela.

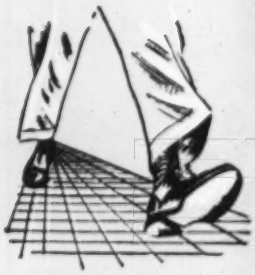
AMERICANS ABROAD

HEAVY CONSTRUCTION—LB & CA

▲† **Oman-Farnsworth-Goysa**, Madrid, Spain, CA $3,333,000. GEN-109, ammunition storage centers, MORON, TORREJON AND ZARGOZA, SPAIN. Bureau Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N. W., Wash., D. C., U. S. A. Bids Aug. 29. CD 94, under LB.

(Proposal Advertisement see pp. 112 to 115)

WHERE SAFE WALKWAYS COUNT...



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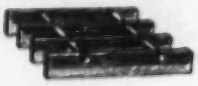

FREE SAMPLE

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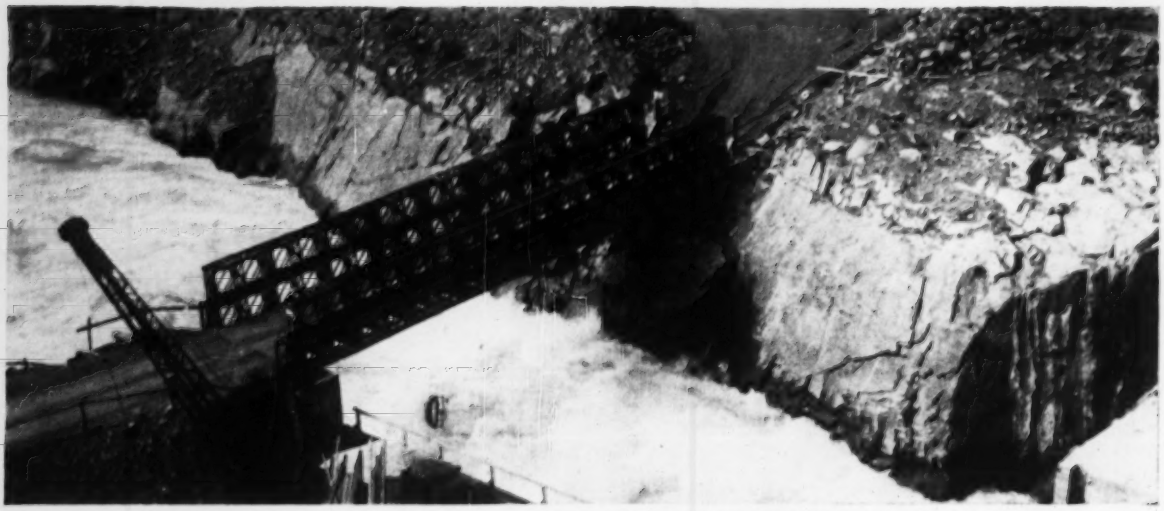
BAILEY BRIDGING



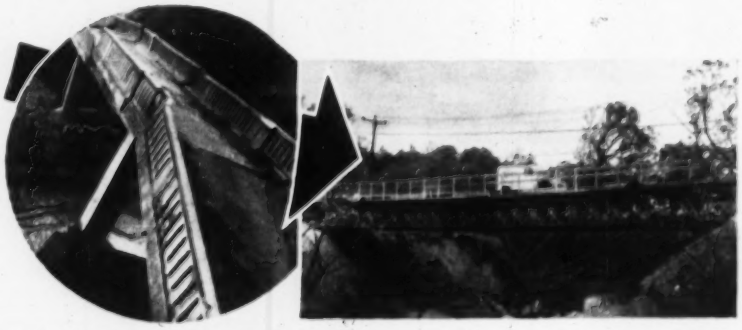
● Application of a double-double Bailey Bridge to provide an easily constructed, and 100% salvageable access bridge on construction project. Contractors are finding Bailey Bridging an indispensable supplement to their construction plant.

BAILEY BRIDGES THE GAP

Construction has been speeded under all conditions by versatile Bailey Bridges. Providing the engineer with an easy-to-handle and pre-designed structure for spanning rivers or gorges, the prefabricated Bailey components may be assembled in various combinations to form trusses having a higher strength-weight ratio than any other type of bridging material. It is ideally suited for spans up to 200 feet, and loads up to 100 tons. Bailey Bridging not only lends itself for emergencies and rush schedules, it can also be used for permanent bridges, for trestles, for long span building girders, loading ramps, etc. Note the following Bailey Bridge features.

- **COMPLETELY FLEXIBLE WITH REGARD TO LOADS OR SPANS.**
- **NO PARTS TOO HEAVY FOR MANHANDLING.**
- **THIS LOW COST BRIDGE IS AVAILABLE FROM STOCK.**

● Right:—Application of two-lane, flush deck Bailey Bridge as an emergency replacement for storm damaged permanent structure. Since no extensive design is required, municipal and state highway departments now have a facility for getting traffic rolling within hours where bridges have been damaged or carried away.



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WRITE FOR ILLUSTRATED LITERATURE

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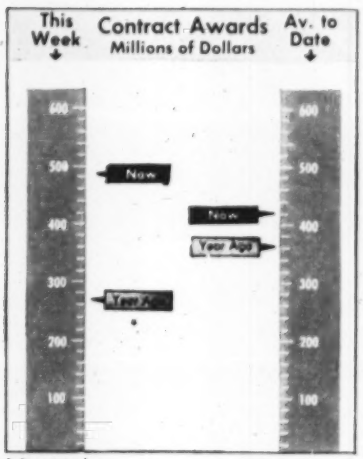
Sole Distributors for Bailey Bridging in USA & Canada

WORLD LICENCEES FOR MANUFACTURE AND SALE. THOS. STOREY (ENGINEERS) LTD. STOCKPORT. ENGLAND.

Construction Scoreboard

Activity this Week



* 3-Day Week

AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 39 wks 1956	Chge %
	$ millions		
Federal	$43.0	$1,320.9	+2
State and Municipal	132.1	4,852.6	+20
Total Public	175.1	6,173.5	+16
Total Private	308.3	10,334.1	+18
U. S. Total	$483.4	$16,507.6	+17
By Type of Work			
Waterworks	$3.2	$262.0	+28
Sewerage	18.5	456.2	+52
Bridges	9.8	450.6	+26
Highways	60.6	1,830.1	+10
Earthwork, Waterways	13.8	578.5	+42
Buildings:			
Public, Excl. Housg.	30.7	1,541.6	+18
Public Housing	12.0	244.8	+11
Private Housing	55.8	4,252.8	−11
Commercial	115.6	1,412.4	+11
Industrial	129.9	1,147.8	+102
Unclassified	33.5	1,330.8	−15
U. S. Total	$483.4	$16,507.6	+17

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

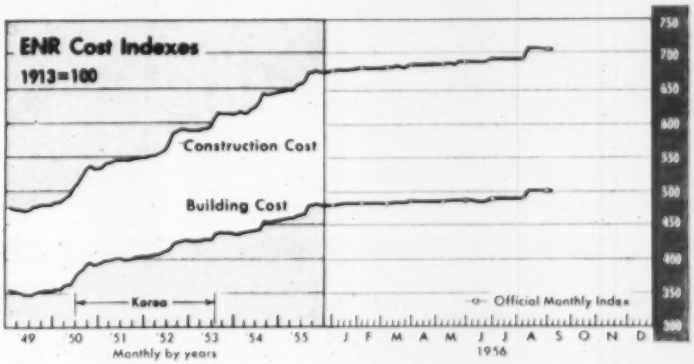
NEW CAPITAL FOR CONSTRUCTION

	Week of Sept. 20	Cum. 38 wks 1956	Chge '55-'56 %
	$ millions		
Corporate Securities	$235.9	$3,715.3	+49
State and Municipal:			
All Except Housing	102.5	3,296.7	+10
Housing	...	42.3	−41
Federal Loans	...	125.7	+20
Federal Aid	...	1,070.0	+25
Total Nonfederal	$338.4	$8,250.0	+26
Federal Appropriations:			
In U. S.	$...	$3,460.3	+2
Outside U. S.	...	15.9	−81
Total New Capital	$338.4	$11,726.2	+17

Cost Indexes as of Now

ENR INDEXES (1913 = 100) 20-cities' average	1956	Percent Change from last Month	Year
Construction Cost	703.87	−0.2	+4.5
Building Cost	499.53	−0.2	+4.1

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 1.770; Building Cost by 3.518.



BACKLOG OF PROPOSED HEAVY CONSTRUCTION

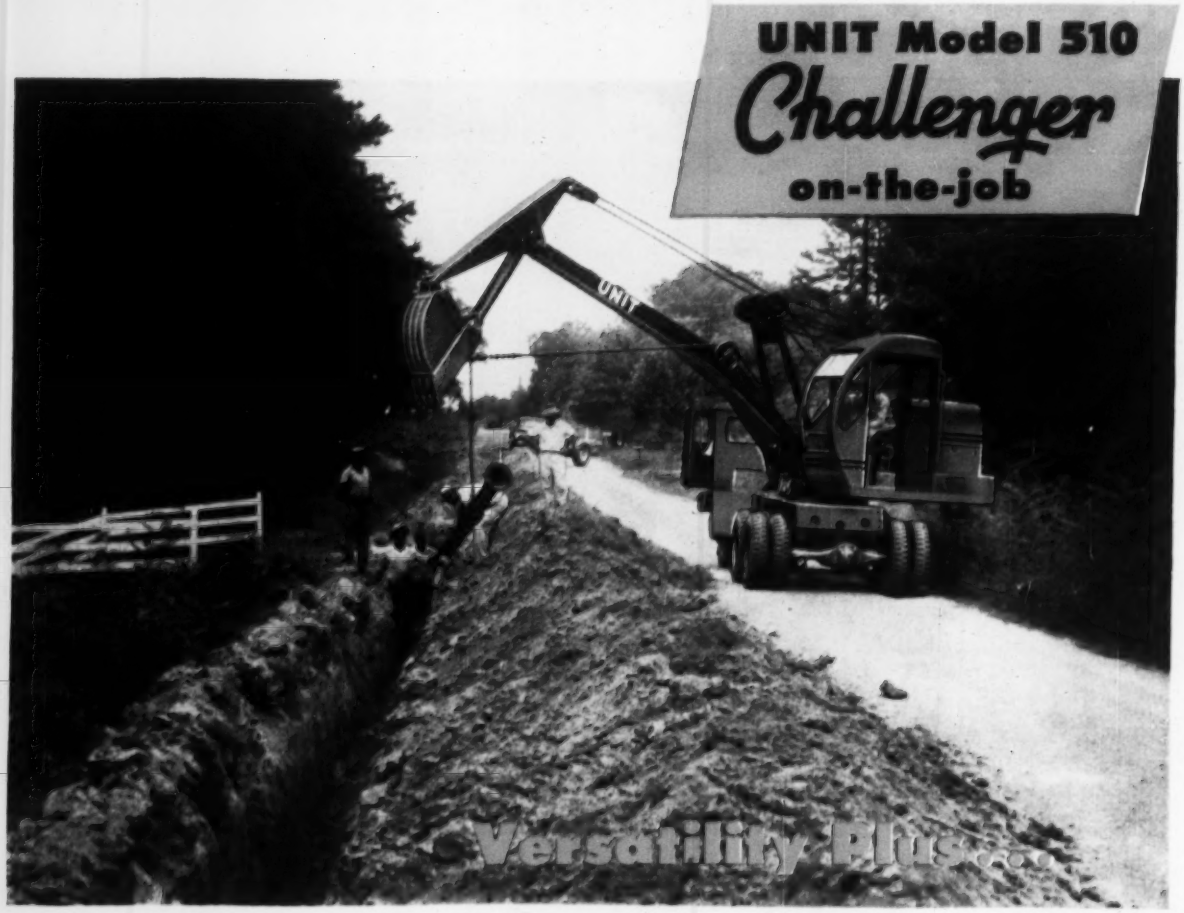
	Aug. 31, 1956 (millions)	Percent Change from last Month	Year
Total U. S. (ENR reported)	$101,656	+1.3	+16.5
By Ownership—			
Private	43,332	+0.8	+18.7
State & Municipal	44,795	+0.5	+16.4
Federal	13,529	+5.6	+10.4
By Type of Work—			
Waterworks	2,088	+1.1	+10.8
Sewerage	3,102	+0.4	+4.3
Bridges	2,985*	+0.4	+6.8
Highways	11,708	+0.7	+4.7
Earthwork, Waterways	11,269	+0.2	+18.5
Public Buildings	18,087	+1.0	+14.6
Industrial Buildings	16,014	+1.0	+23.3
Commercial Buildings	17,838	+1.2	+20.9
Unclassified, Private	9,391	−0.2	+8.1
Unclassified, Public	9,174	+6.9	+37.0
By Regions—			
New England	5,741	+3.2	+15.1
Middle Atlantic	21,366	+0.7	+11.6
South	12,118	+1.7	+14.7
Middle West	17,803	+1.2	+16.2
West of the Mississippi	23,541	+1.2	+9.9
Far West	21,087	+1.3	+33.3

*Includes private bridges, $90 million.

FLOW OF NEW PROJECTS INTO THE BACKLOG

	1956 August	8-Month (millions)	Percent Change from '55 Mo.	Year Cum.
Total U. S. (ENR reported)	$2,153	$17,161	+0.4	+16
By Ownership—				
Private	830	8,950	−44	+26
State & Municipal	565	6,643	+67	−6
Federal	758	1,568	+132	+145
By Type of Work—				
Waterworks	42	280	−56	−27
Sewerage	50	472	+183	+48
Bridges	22	427**	+100	−46
Highways	181	1,013	+409	−70
Earthwork, Waterways	49	516	−63	+14
Public Buildings	342	3,238	+64	+70
Industrial Buildings	316	4,055	−50	+52
Commercial: Mass Housing	239	2,323	−49	+5
Other Bldg.	243	1,822	+82	+25
Unclassified, Private	32	750	−87	+44
Unclassified, Public	637	2,437	+286	+274

**Includes private bridges, $43.5 million.



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Government Aids Low-Cost Housing

Sensitive to Democratic charges that tight money policies are working hardships on homebuilders and potential home buyers, the Eisenhower Administration last week took four steps to relieve the pinch.

Two of the moves will make secondary market operations of the Federal National Mortgage Assn. more attractive to builders and lenders.

Another action reduces the downpayment on low-cost housing where the mortgage is insured by the Federal Housing Administration.

The fourth step is designed to make available to savings and loan associations more funds to make mortgage loans.

• **Help from Fannie Mae**—Of the housing changes announced by the White House, the most significant seems to be the increased reliance the Administration is placing on the Federal National Mortgage Assn., popularly known as "Fannie Mae."

The agency acts as a secondary mortgage market, purchasing mortgages from the original lenders so that the lenders can use the proceeds to make new loans. Since July 1, Fannie Mae has made advance commitments to purchase mortgages at 92 cents on the dollar. (A bank or other lender would sell a $10,000 mortgage to Fannie Mae for $9,200.)

Now, Fannie Mae is upping the price it will pay. Instead of 92 cents on the dollar, the agency now will pay 94. This will encourage builders and lenders to make more mortgage loans, the Administration feels.

To make it still more attractive for lenders to turn to Fannie Mae, the Administration is lowering the amount of stock a lender must buy in the association when he sells a mortgage.

In the past, a lender had to buy Fannie Mae stock in an amount equal to 2% of the mortgage before the agency would buy the paper. Now the mandatory stock percentage has been trimmed to 1%.

• **Lower downpayment**—The third "liberalizing" move drops the downpayment on FHA-insured low-cost homes ($9,000 or less) from 7% of the purchase price to 5%. Veterans Administration housing loans are not affected, and downpayments are unchanged on FHA mortgages for homes costing more than $9,000.

The fourth step affects savings and loan associations. The Federal Home Loan Bank Board will permit these associations to borrow up to 12½% of their share capital—enabling them to get more loan funds—instead of the present 10% limit.

• **Will it help?**—There was a wide variety of opinion on the effects of these changes. Housing Administrator Albert M. Cole called the moves "a great boon to the country." Others were less enthusiastic. Some said flatly the effects would be "negligible."

Stanley J. Baughman, head of Fannie Mae, worried publicly about a stampede of mortgage sellers. He says liberalization of Fannie Mae's mortgage purchase terms could nearly double the number of mortgages the agency is buying. (Recently, the agency's purchases have been setting weekly records.)

Officials of the Federal Reserve Board, noncommittal publicly, said privately that they opposed the move for psychological reasons because it appeared to be in conflict with the Fed's anti-inflationary moves, but added that the "economic effects" will be slight.

It was pointed out, for example, that only 27½% of the FHA mortgages currently cover houses in the $9,000 or under bracket, so few units will be aided by lower downpayments.

The Federal Home Loan Bank Board's realization of the borrowing limitation on member institutions was regarded as virtually meaningless.

Savings and loan associations make most of their mortgage loans out of the savings on deposit with the associations. They can also get loan funds by borrowing from the Home Loan Bank System, but not all of them do. Of the 4,300 savings and loan associations only about half have been using the borrowing privilege at all. And, in the entire system, only about 450 had borrowed up to the old 10% limit.

After taking a close look at the package, some builders last week were still dubious about the value of the help they had received.

...And Builders Help Themselves

News of government aid came to homebuilders last week when they were in the midst of an annual effort to help themselves by promoting National Home Week.

The promotion, sponsored by the National Assn. of Home Builders, was nationwide, but enthusiasm was spotty. At one extreme, Dallas and Houston witnessed lavish, well-ballyhooed homebuilders' programs. At the other extreme, Milwaukee builders did little beyond opening some model homes at night—they had staged their big show in July.

The omnipresent tight money market had dimmed hopes at the outset

(Continued on page 106)

in many cities. But, results of the promotion were good in some localities. St. Louis exhibits, for example, drew 75,000 of the curious on opening day—and $1.5 million worth of houses changed hands. Tulsa builders sold half of their display models before the official opening.

From a design standpoint, this year's display homes contained few surprises. Next year's houses will follow the same trends reported in an ENR survey of homebuilders earlier this year (ENR June 28, p. 21).

There is a noticeable shift toward conservative exteriors. Flat roofs and ultra-modern architectural treatments are out of fashion in most areas. The modified ranch-type house predominates with split-levels a strong second. Some Colonial type houses turned up in this year's exhibits, but as a general rule, there were few two-story houses.

New houses will be bigger, again continuing a trend spotted earlier. In many cases, the "minimum" is a house with three bedrooms, 1½ baths. Separate dining rooms are coming back. Living rooms are getting larger and there is strong demand for the so-called "family room." Patios are a big attraction, and in some areas, two-car garages are almost standard.

Air conditioning is a good seller in the South and West. Of Oklahoma City's 21 display houses, for example, all but one were air conditioned. Six were in the $15,000 to $18,000 bracket.

Built-ins and gadgetry are emphasized for sales appeal. Besides major kitchen and laundry appliances, builders now offer such "glamor" items as Hi-Fi, television, intercom systems, food mixers, knife sharpeners and vacuum cleaners.

Prices generally are higher than last year. Despite the higher price tags, builders put their 1956 displays together with an eye on "saleability" rather than "showability," as in 1955.

Part of the higher price trend is due to larger homes and some of the gadgets. But builders said that more important factors are higher land costs, higher wage rates and higher prices on construction materials.

Most model houses in this year's Home Week seemed to fall within the $15,000 to $20,000 price bracket.

The gloom pervading most of the housing industry was belied by gala promotions staged in some localities.

Giveaways marked Home Week in Salt Lake City and Houston.

And, "Mrs. America" toured developments by helicopter for the first three days in Dallas, where about one-quarter of the participating builders hired professional models to conduct potential buyers through the homes.

Cement Prices Up

Eleven major producers plan increases on Oct. 1

At least eleven major producers will increase the price of portland cement on Oct. 1. Most of the increases will be 15 cents a barrel, a few will be higher.

The latest rash of cement price increases is limited so far to eastern and southern mills. However, industry sources see a possibility of corresponding increases later at western mills.

Fourth quarter increases announced so far are mainly at mills that did not increase prices earlier in the year.

However, some mills will be posting their second price increase of the year. Among these are plants at Nazareth, Pa.; Bath, Pa., and Northampton, Pa., where prices will go up another 15 cents a barrel. A 15-cent hike in the fourth quarter also has been scheduled by a Hudson, N. Y., mill that jumped its price 30 cents a barrel in the first quarter.

Here's where the fourth-quarter increases will come:

- Alpha Portland—15 cents a barrel at Martin's Creek, Pa., and Catskill, N. Y.
- American-Marietta—15 cents at Martinsburg, W. Va.
- Hercules—15 cents a barrel at all plants.
- Ideal—20 cents a barrel at New Orleans and 15 cents at Baton Rouge, La.
- Lehigh Portland—15 cents at Alsen, N. Y.; Union Bridge, Md.; Fordwick, Va.; Sandt's Eddy, Ormrod and Fogelsville, Pa.
- Lone Star—20 cents at New Orleans and Norfolk, Va., and 15 cents a barrel at Hudson, N. Y.; Lone Star, Va.; and Nazareth, Pa.
- Medusa—15 cents a barrel at York, Pa.
- North American—15 cents at Howes Cave and Catskill, N. Y., and at Security, Md.
- Penn-Dixie—15 cents at Penn-Allen, Nazareth and Bath, Pa.
- Universal-Atlas—15 cents at Hudson, N. Y., and Northampton, Pa.
- Dragon—15 cents at Thomaston, Me., and Northampton, Pa.

All of these increases will come in the mill prices. But there is no indication of the full effect on prices builders will pay for cement in various cities.

ENR's cost indexes for 20 key cities, for example, show no general pattern in annual increases. Between the third quarter of 1949 and the third quarter of 1950, for example, prices went up an average of only three cents a barrel. But, on the same basis, prices jumped 18 cents a barrel the following year as producers rushed to beat imposition of Korean War price controls.

The following year, price increases at the retail level averaged six cents. Then, from Sept. 1, 1952, to Sept. 1, 1953, prices climbed 11 cents a barrel. The next year, they moved up 13 cents and the following year a dime.

From the third quarter of 1955 to the present, cement prices in the 20 key cities have gone up 16 cents a barrel at the retail level—not counting the latest wave of price boosts which will show up in the fourth quarter report.

Bond Market Better

Municipals sell briskly; high yields are attractive lures

For the first time in months, the bond market has picked up strength. Attracted by high yields, investors finally turned to municipal bonds and dealers had no trouble selling last week's issues.

Among the offerings that found a ready market were:

- $29 million Los Angeles School District bonds, offered at yields of 2.00% to 3.10%.
- $9.5 million Kansas City, Mo., water revenue bonds, yielding from 2.50% to 3.00%.
- $4 million Pima County, Ariz., School District bonds, yielding from 2.40% to 3.40%.
- $2.9 million Springfield, Ill., electric revenue bonds, yielding 2.40%.
- $2.35 million Sonoma County, Calif., Flood Control District bonds, priced to yield from 2.50% to 3.35%.

Many others fared as well. To municipalities that have been unable to get bids for bonds to finance local public works projects, such as schools, sewerage systems, water supply facilities or roads, the improvement in the bond market could be significant.

However, municipal bond experts this week told ENR that interest rates will continue high. The only difference, they point out, is that some bond issuing agencies could not get realistic bids for their bonds in the past three months even with high interest rates.

Part of the upturn in the bond market may be traced to the pressures on the stock market. With some weakening in even "blue chip" stocks, some investors have pulled out of the stock market and purchased municipal bonds instead.

Another factor that strengthened the

(Continued on page 108)

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municipal bond market in the past week to ten days was the drop in unsold bonds still in dealers' hands and a comparatively small quantity of new issues scheduled to come to market.

Some $70 million in new municipal bond issues were scheduled to be sold this week and the "visible supply," i.e., issues definitely on the calendar, is only $230 million for the next 30 days.

One unknown, according to bond experts, is the "invisible supply" of bonds. In the past three months, many bond issues have been postponed because of the weak market. If investors are willing to pay a better price for bonds, now, many of these municipalities will reschedule their issues.

Will interest rates weaken? Wall Street sources say "no." In fact, they feel that banks may raise the prime bank rate again—within a month, unless there is a noticeable change in the market.

They point out that the interest rate the Treasury had to pay about ten days ago on 91-day bills moved up to 2.098%—close to the Federal Reserve's 3% discount rate.

If the Treasury bill rate stays close to the discount rate for another two or three weeks, banks will boost the interest rate and the Federal Reserve will follow with another hike in the discount rate, financial experts say.

Worse Shortage

Construction faces more competition for steel

The shortage of steel for construction—particularly structurals and plates—probably will be worse next year than had been expected. The construction industry faces stiffer competition for available steel because of rising demands in other steel-consuming industries.

Demand in most of the industries that compete for steel is expected to rise. If the forecasts are correct, construction probably will be near the end of the line when supplies are handed out.

Prediction for an increase in steel demand comes from Howard V. Clark, executive vice president of Detroit Steel Corp.

Clark sees pressure for more steel building up in the following industries: autos, railroads, farm equipment, general machinery, containers, oil and gas and shipbuilding. The consumer appliance field also may see a slight increase in demand for steel, according to Clark.

Main trouble spots for construction will continue to be structurals and heavy plate. Clark cites the fact that several mills already have delivery schedules extended as long as 12 to 16 months.

Availability of structurals and plate will be limited by the amount of plain material produced. While some experts see the steel industry operating next year at from 85% to 96% of rated capacity, Clark expects an average operating rate of 90%. At that rate, the industry would produce about 120,000,000 ingot tons.

Some contractors are convinced that 1957 would be a headache even if the steel situation remained as it is now. An ENR survey shows that contractors are feeling the structural steel shortage in all 20 key cities.

Deliveries are slow, sometimes running up to a year or more for structurals.

Suppliers are on allocation from the mills. Some construction projects are being held up; in others, designs are being changed to use substitute materials.

Boston steel suppliers are attempting to fill old orders, but they will not take orders from new customers.

One of the principal New York suppliers wiped all old orders off the books, and started in fresh, booking only new orders that have a reasonable chance of being filled in the next few months.

Minneapolis contractors can get delivery on small orders of structural steel in six months. But, larger orders are quoted at 16 months delivery time.

While the shortage of structurals is the most prolonged and the most severe, other types of steel used in construction also are short.

Deliveries are slow or shortages are reported in 17 of the 20 key construction centers for reinforcing bars—only Cleveland, Dallas and Kansas City are in good shape. Expanded metal lath is short in Baltimore, Cincinnati, New Orleans and St. Louis. And, of the 20 key cities surveyed by ENR, only one—Philadelphia—reports an adequate supply of steel sheet piling.

Equipment Sales May Climb 20% to 25% Higher Next Year

Construction machinery and equipment sales next year may run 20% to 25% above this year for the industry as a whole, according to estimates by Irwin White, sales manager of the Gradall Division of Warner & Swazey.

The expanded highway program alone is expected to account for a 15% increase in 1957 over this year's record volume, White said.

Are roadbuilders ordering more new machines than they actually need for present work to overcome slow deliveries or beat possible price increases? White doesn't think so.

But, contractors may be replacing used equipment faster than they have in the past because of tax advantages.

Faster depreciation, permitted in 1954 tax law changes, encourages contractors to replace equipment more often than in the past. These changes enable firms to write off new equipment costs for tax purposes over a shorter period, and recover their machinery and equipment investment faster.

Building Materials Center Planned in New Orleans

A million-dollar building materials center is being planned in New Orleans by a group of businessmen in the city. Construction may start before the end of the year.

The facility is being designed as a one-stop "supermarket" for builders and prospective home owners.

The three-story structure will contain 45,000 sq ft of floor space with exhibit room for several hundred building materials. In addition to viewing the building materials available, visitors will be able to obtain information on home sites, residential financing, design and interior decoration.

The building will feature exterior concrete stairs and cantilevered galleries to permit the public to view lighted displays at any hour of the day or night.

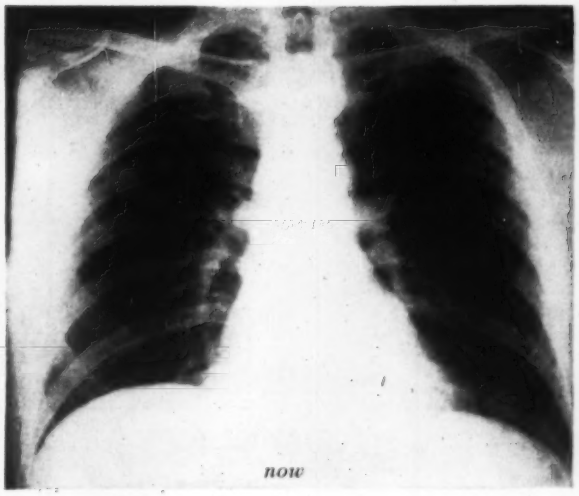
A branch bank and two stores will be located on the first floor. The second floor, in addition to display areas, will house an auditorium, conference room and library. A portion of the third floor will have offices for realty firms, architects and manufacturers' agents.

The project is being designed by the architectural firm of Grimball-Van Amerongen.

Business Briefs . . .

• **Canadian cement**—Production is due to start in the next few days at the $8-million plant of the Saskatchewan Cement Corp., first cement producer in that Canadian province. The plant will have an annual capacity of 850,000 barrels.

• **Acquire steel firm**—Materials manufacturer H. K. Porter Co., Inc., is acquiring another steel company Oct. 1. Newest addition to the Porter fold: West Virginia Steel and Manufacturing Co. which produces light steel rails, reinforcing bars, mine roof bolts, hot rolled bars and semi-finished steel.



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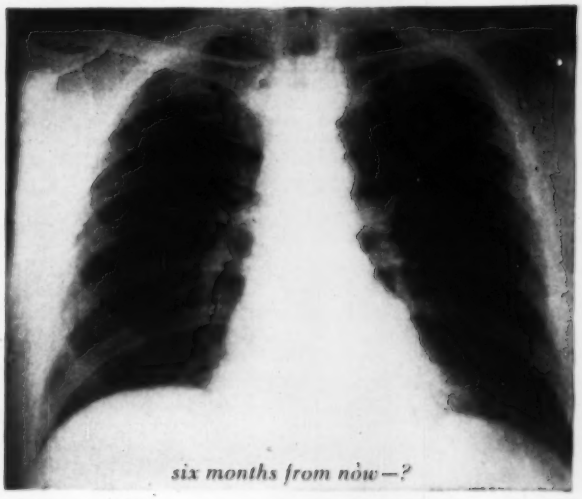

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A Look at Longer Contracts

Management group sees the long-term contract as a tool for labor peace but notes the need for caution in its use

The long-term labor contract is in itself no guarantee of labor peace. Such a contract may be costly, it may be illusory—it all depends upon how well it's negotiated and administered. But the trend toward its use is now behind us. Long-term labor contracts for two or more years are part of our economy and are most useful in those industries with long-term production schedules.

These are some of the thoughts expressed last week at the Fall Personnel Conference of the American Management Association, Inc., in New York. The discussion was led by E. F. Ohrman and John L. Waddleton, chief negotiators for Allis-Chalmers Manufacturing Co.

• **Pitfalls**—Perhaps the biggest pitfalls in long-term contracts, according to AMA spokesmen, are the sacrifices management is sometimes willing to make to obtain them, and the use of reopening clauses.

At the outset of the discussion, a long-term contract was rigidly defined as one for "two or more years with all terms and conditions fixed for its full term, with no reopenings of any kind, and with a comprehensive and unequivocal no-strike clause." Anything short of the absolute, it was noted, may make the contract "long term in name only and not in fact."

Cautioning employers to go slow on the cost of such contracts, Ohrman stressed the fact that the right to manage belongs to management under the common law. "When management, perhaps in the hope that a long-term contract will guarantee labor peace," he said, "buys it at the cost of surrendering its control of the business operation, it has gained nothing and has possibly lost everything."

The cost problem, according to Ohrman, is two-fold. In terms of dollars and cents are the various items usually included in union demands: annual wage increases, pensions, group insurance, health and accident insurance, some form of compulsory unionism, supplementary unemployment benefits, and allowances for cost-of-living adjustments. In terms of business control are restrictions on the right to subcontract; power in an arbitrator to modify disciplinary action; selection of length of service as the controlling factor in work force allocation (job assignments, transfers, promotions, shift assignments, layoffs) all of which, according to Ohrman, are part of management's prerogatives that shouldn't be invaded.

In the final analysis, he said, labor peace can be achieved only when "there exists, on both sides of the table, a complete recognition of and a complete respect for the other fellow's area of responsibility"—the employer's right to manage, the employee's interest in job security, the union's concern with its own security.

• **Reopeners**—But even a well negotiated contract may fail to achieve labor peace and production stability. "An inherent hazard of a long-term agreement," said Ohrman, "is the possibility of changes in the union personnel responsibile for the administration of the agreement." If the control shifts to those who disagree with the original negotiators, "peace" may be rather fleeting.

A more serious danger, however, appears to lie in the use of reopening clauses. In such cases, the employer finds himself not only faced with the necessity of renegotiating the issue or issues specified, but, under prevailing National Labor Relations Board rulings, he may have to renegotiate the entire contract.

This, according to Waddleton, stems from the fact that the NLRB construes the law to allow a challenging union, under certain types of reopeners, to hold a representation election. If successful, the new union can demand renegotiation of the entire contract.

Other situations that may jeopardize the long-term aspect of a contract are union mergers and a switch of union affiliation by employees. Does the successor union inherit the contract, or can it demand a new one? The law still is not jelled.

• **Dilemma**—Some attention was given to one of the obvious dilemmas inherent in long-term agreements—the longer the term the greater the possibility of changing needs or conditions warranting a modification of the contract.

Here, Ohrman was inclined to consider opposition to Walter Reuther's "living doctrine" theory a "tempest in a teapot." A clause, he said, that allows modification or change by mutual consent does preclude the legal right to press unilaterally for a change, but at the same time allows a contract to be modified if it later appears to be in the best interests of all to do so. At the same time, he noted, it has the psychological advantage of expressing a willingness to discuss issues that may later arise.

A contrasting approach, noted by Waddleton, is use of a waiver clause by which the parties agree not to attempt to negotiate on any subject whether it's covered in the contract or not. Unless the comprehensiveness of the contract is clear, the clause might prove a dangerous shackle.

Taken as a whole, the long-term contract was considered a definite tool to labor peace—but one that may boomerang unless carefully drawn and thoughtfully negotiated.

Work Assignments

Taft-Hartley employed to stop jurisdictional dispute

An example of how the Taft-Hartley Act is used against the building trades in their jurisdictional conflict with industrial unions turned up last week, when the National Labor Relations Board handed down a decision against a local of the plumbers union that had protested assignment of construction work to industrial employees.

The dispute arose during construction of a water purification plant for the St. Louis Water Co. The plant itself was being constructed under contract and the plumbers were on the job as employees of a subcontractor. Trouble arose when the company proposed to use its own employees—members of the utility workers union formerly in the CIO—to install water mains from the river to the plant. In protest of this assignment, the plumbers struck, claiming that installation of the mains was historically within their jurisdiction.

The plumbers were brought before the NLRB on an unfair labor practice charge under Sec. 8(b)(4)(d) of the Taft-Hartley Act—engaging in a strike to force an employer to assign work to them instead of to members of another union.

Without deciding whether the plumbers' claim had any merit, the board upheld the charge because the union was using strike pressure for a reason prohibited by law.

Under the law, the cards were stacked against the plumbers in two respects:

(*Continued on page 112*)

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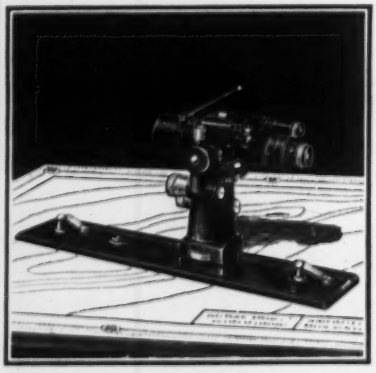

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. . . Labor

• The utility workers already had obtained in their labor contract with the water company a clause requiring the company not to engage in construction by contract if the work were such that company employees could do it.

• The company, in assigning the work to its employees, was not violating any NLRB order or certification determining who the bargaining agent is for the employees to whom the work is assigned.

Secondary Boycotts

Picketing at common sites still plagues labor board as law moves into politics

Two aspects of secondary boycotts—picketing at common work sites and use of roving pickets—continue to plague the National Labor Relations Board. And some new cases show there's still about as much disagreement over what the law is as there is over the political question of whether Congress should liberalize or change the secondary boycott provisions of the Taft-Hartley Act.

Last month the NLRB had before it the same problem that confronted the U.S. Supreme Court in the Denver Building and Construction Trades Council case back in 1951: When does picketing at a site where more than one employer is working cease to be lawfully primary and become illegally secondary? The board's answer is that picketing at a common site is unlawful if the principal object is to put pressure on neutral employers.

Another angle of the same problem was before the board last week: If the primary employer has a nearby place of business, can he lawfully be picketed elsewhere, such as at common construction site when he makes deliveries? In reply to that question the NLRB's answer is still "no," although it seems less sure about it now than it did before.

• Law—When the secondary boycott provisions were put into the law, the purpose was to protect innocent third parties from being injured in labor disputes in which they are not involved. In a typical case, workers who have a dispute with their employer (primary) put pressure on a neutral employer (secondary) to induce him to cease doing business with the primary employer until the workers win their point. The law doesn't speak in terms of "secondary boycotts" or "primary" and "secondary" employers but merely prohibits labor groups from striking or

engaging in work stoppages designed to force an employer to stop dealing with other persons in order to achieve certain goals.

Common site and roving picketing situations raise this difficult question: Is the secondary employer rather than the primary one the real target of the picketing? An affirmative answer makes the law apply.

Answers to the question have produced two general rules used by the NLRB as guides:

• Picketing at a common construction site is not a violation of the law if the primary employer's workers are at the site doing their normal work, if the picketing is confined to the area where they are working, and if picketing signs make it clear the dispute is with the primary employer only.

• Picketing of an employer, such as a supplier of gravel or concrete, as he moves about from job to job, is in itself unlawful if the employer has his own place of business where the picketing could be confined and still be effective. Originally adopted by the NLRB, the rule has been criticized as too rigid and unreasonable. The board is still sticking to its guns but recently has been finding other pegs on which to hang the same results.

• **Examples**—Last week, for instance, the NLRB refused to abandon its rigid roving picketing rule used in the Campbell Coal Co. case, but dug up some additional grounds for holding the picketing illegal: Neutral employers had been asked to stop doing business with the struck employer and neutral employees hadn't been told the strike was against the primary employer only. And last month the board, in ruling against picketing of ready-mixed concrete delivery trucks at construction sites of AGC members in Omaha, Neb., used the alternative approach: illegal in itself, or illegal because the object was to induce AGC members to boycott the struck concrete supplier.

In using the second alternative, the board is coming back to the theory used in the Denver Building Trades case: Striking or picketing is illegal if one of its objects is to force one employer to stop doing business with another.

A similar reaction on the part of the board was evident last week when it held illegal, in a split decision, picketing at entrances to a retail food market occupied by the primary and neutral employers but owned by the primary employer. The majority thought "involvement of neutrals" was the principal object but two dissenters couldn't see a truly secondary situation.

• **Legislation**—This is one of the long-recognized headaches in picketing at common construction sites and in use of roving pickets.

In the Denver Building Trades case, where the trouble and the picketing stemmed from employment of a non-union electrical subcontractor on a union construction job, Justices Douglas and Reed, who dissented, thought the legal right to strike shouldn't be whittled away at common construction sites by unrealistic use of the secondary boycott provisions.

Since then, President Eisenhower has pointed out that those working together on a construction project usually have such closely interwoven interests that none can be considered really neutral in any labor dispute. He has recommended the law be changed so that the secondary boycott provisions will no longer protect secondary employers on construction sites.

The building trades have repeatedly asked Congress for such an amendment. The Republicans are pledged to push President Eisenhower's recommendation. And the Democrats, in their pledge to rewrite the Taft-Hartley Act, are presumably committed to the same course, although Stevenson so far has been less specifically articulate.

Training Program in Greece Undertaken by Labor Group

The technical assistance program of the United Nations is being extended by the International Labour Organization to the construction industry in Greece.

An ILO team of vocational training experts has been sent to Greece charged with the task of demonstrating modern methods of instruction in the building trades. The government schools in which the program is being launched are schools for youngsters who were orphaned or whose parents were disabled in World War II or the Greek Civil War or by earthquakes. After receiving accelerated training in a trade between the ages of 16 and 20, the youths return to their villages as craftsmen.

The ILO team now is establishing two pilot classes in a school near Athens. One is in masonry, the other in carpentry. ILO supplies both the equipment and the tools.

Three Frenchmen make up the ILO team: Francis Larbec, engineer at the National Normal School of Apprenticeship at Lyons; Louis Rouier, instructor in masonry and reinforced concrete at the Ville Urbanne Apprenticeship Center; and Albert Avel, cabinet-making instructor at the College d'Oullins.

OFFICIAL PROPOSALS

(Continued on page 114-EEE)

Bids: October 23, 1956

The Port of New York Authority

NEW YORK INTERNATIONAL AIRPORT
FLOODLIGHT TOWERS
CONTRACT NYA-650.037

Sealed proposals for the furnishing, delivery and storage of floodlight towers for New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, October 23, 1956, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $50.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, September 27, 1956

COMMONWEALTH OF MASSACHUSETTS
Department of Public Works. NOTICE TO CONTRACTORS. Sealed proposals for furnishing, erecting and painting structural steel for bridge on Route 28 Relocation over the Merrimac River in the Towns of ANDOVER and METHUEN (Contract No. 21 I-3502) will be received at Room 427, 100 Nashua Street, Boston, Mass., until 2:00 P.M. (DST) of TUESDAY, OCTOBER 16, 1956 and at that place and time publicly opened and read. Proposal guaranty: $23,000. Charge for plans and proposal forms: $10; amount returnable only to bidders. Complete information at said office; plans on display at District office in Danvers. Minimum wage rates for this project have been pre-determined by law and are set forth in the bid proposal. Minimum dump truck rates have been established. An award will not be made to a Contractor who is not equipped to undertake and complete the work. Right reserved to waive any informality in or reject any or all proposals. By: JOHN A. VOLPE, Commissioner of Public Works. September 15, 1956.

U. S. Government

Department of Commerce, Bureau of Public Roads, September 13, 1956. SEALED BIDS will be received at the office of the Division Engineer, Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia, until 11:00 a.m., D.S.T., OCTOBER 12, 1956, for 2.370 miles grading, draining, bridge abutments, and other work from Spout Run to Chain Bridge. Project 1A1, George Washington Memorial Parkway, Arlington County, Virginia. The approximate quantities of the more important items are 65 acres Clearing and Grubbing, 628,950 cu. yd. Excavation, 4,950 cu. yd. Concrete, 660,000 lb. Reinforcing Steel, and 6,725 lin. ft. Concrete Culvert Pipe. Minimum wage rates have been fixed as required by law. Plans, specifications and proposal forms are available upon request at the address given above. H. J. Spelman, Division Engineer.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.10 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record, 330 West 42nd Street, New York 36, N. Y.

Bids: October 16, 1956

New York State Bridge Authority

Sealed proposals will be received by the New York State Bridge Authority at its office at 22 Ferry Street, Kingston, New York until 2:00 o'clock P.M., Eastern Daylight Time, October 16, 1956, at which time and place they will be publicly opened and read, for the furnishing of labor and materials necessary in making an addition to the Traffic Way at the easterly approach to the Mid-Hudson Bridge spanning the Hudson River at Poughkeepsie, New York.

Plans, specifications, proposal blanks, form of contract, bond and information for bidders may be seen at the office of the New York State Bridge Authority, 22 Ferry Street, Kingston, New York and copies of the same may be obtained therefrom upon a deposit of Thirty Dollars ($30.00) which sum will be refunded if the plans and specifications are returned by bidders in good condition within twenty days (20) of bids having been received and acted upon by the New York State Bridge Authority, and Twenty-five Dollars ($25.00) of the deposit will be so returned to non-bidders.

A certified check on a National Bank, State Bank or Trust Company in the sum of ten per cent (10%) of the amount of the bid, made payable to the New York State Bridge Authority must accompany the bid, as a guarantee that the contract will be entered into, if awarded.

A faithful performance bond in the sum of one hundred per cent (100%) of the contract price will be required.

A labor and material bond will also be required.

The New York State Bridge Authority reserves the right to reject any or all bids.

The Authority's preliminary estimate of cost is $180,737.50.

ROBERT HOE
Chairman

Bids: October 16, 1956

City of Richmond, Virginia

NOTICE TO BIDDERS

Sealed Proposals will be received at the office of the Director, Purchases and General Services, 4th floor, Mosque Building, Laurel and Main Streets, Richmond, Virginia, until but not later than 11 o'clock A.M. E.S.T., October 16, 1956, at which time they will be publicly opened and read aloud, for the following work which may be awarded in whole or in part:

Location: The pumping station is to be located at a site northwest and adjacent to the Sewage Treatment Plant, situated near the southwest bank of the James River at Rockett's Wharf, northeast of the United States Naval Diesel School, in the City of Richmond, Virginia.

Type of Work: Division II—Main Pumping Station—General, includes the construction of the pumping station, junction chamber, regulator chamber, incoming sewers and outside piping, and all appurtenat work, except that included under Division III.
Division III—Main Pumping Station—Pumping Equipment, includes the furnishing, testing and delivering of the sewage pumps together with motors, engines, drives and appurtenances.

The proposal and other contract documents may be examined at the office of the Director of Public Works, 217 Governor Street, Richmond, Virginia, and at the office of Greeley and Hansen, Engineers, 220 South State Street, Chicago 4, Illinois. Copies of the contract documents may be obtained from the office of the Director of Public Works upon the deposit of Twenty-Five Dollars for each set. Any general contractor who submits a bona fide bid on the project will be refunded his payment in full for not more than three sets, and will be refunded fifteen dollars per set for each additional set. All others will be refunded fifteen dollars per set upon the return of the documents in good condition within ten days after the opening of the bids.

J. W. Huffman
Director of Purchases and
General Services

Bids: October 11, 1956

This Is A Re-advertisement With A Change In Specifications

DELAWARE RIVER PORT AUTHORITY
of the
COMMONWEALTH OF PENNSYLVANIA
and the
STATE OF NEW JERSEY
Administration Building
Camden, New Jersey
WALT WHITMAN BRIDGE CONTRACT
NO. P-13

Sealed bids will be received for "Installation of New Stacks on the Power Plant of Publicker Industries, Inc., Delaware and Packer Avenues, Philadelphia, Pa.", known as Contract No. P-13, at the office of the Executive Director of the Delaware River Port Authority, Administration Building, Bridge Plaza, Camden, New Jersey, until 2:30 P. M., Eastern Daylight Time, Thursday, October 11, 1956, at which place and time they will be publicly opened and read by the Authority.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this Contract, which may be obtained upon the deposit of $10.00 check, which will be remitted upon receipt of bid or the return in good condition of the copies so taken within thirty days after the opening of bids.

Each proposal must be accompanied by a certified check in the sum of $20,000 payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business either in Philadelphia, Pennsylvania, or Camden, New Jersey, and must not be enclosed with the sealed bid. The surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a Performance and Labor and Materialman's Bond in the sum of 100 percent.

The Authority will afford prospective bidders an opportunity to inspect the site of the work.

The Authority reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
JOSEPH K. COSTELLO,
Executive Director

9/19/56
McS

Bids: October 9, 1956

Sewage Treatment Plant

SEWAGE TREATMENT PLANT, SEWERS AND
WATER DISTRIBUTION SYSTEM
EXTENSION
VILLAGE OF VERNON,
ONEIDA COUNTY, N. Y.

Sealed proposals for furnishing all labor, equipment and material for the construction and installation of Sewage Treatment Plant, Sewers and Water Distribution System Extension and appurtenances for the Village of Vernon, N. Y., will be received by the Village Board of the Village of Vernon at the Fire Station, Vernon, N. Y., until 2:00 P.M. Eastern Daylight Time on Tuesday, October 9, 1956, at which time they will be publicly opened and read aloud.

The work will be divided into the following contracts:

1. Sewage Treatment Plant.
2. All sewers exclusive of those in the Black Addition.
3. Water distribution system extension and sewers in the Black Addition.

These contracts may be awarded separately or in any combination that the Village Board may deem to be in the best interests of the Village.

The Information for Bidders, Form of Bid, Form of Contract, Performance Bond, Plans and Specifications may be examined at the office of the Village Clerk, Vernon, New York, and copies thereof may be obtained from William T. Field, Consulting Engineer, Watertown, N. Y., upon a deposit of Fifteen ($15.00) Dollars for each set, which sum will be returned to all bidders upon their return in good condition, within thirty (30) days after the opening of the bids.

The Village Board reserves the right to waive any information in or to reject any or all bids or to accept any bids that they deem is in the best interests of the Village.

Each bidder must deposit with bid, security in the amount of not less than five (5%) percentum of the bid in the form and subject to the conditions provided for in the Information for Bidders.

The successful bidders will be required to furnish a performance bond in such form and having as surety thereas such surety company or companies as are approved by the Village Board, in an amount of not less than 100% of the total amount of the accepted bid.

Dated: September 5, 1956

VILLAGE OF VERNON, N. Y.
JOHN W. BLACK, JR.
MAYOR
WILLIAM T. FIELD,
Consulting Engineer
Watertown, N. Y.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4768) will be received at Ogden, Utah, until October 23, 1956, for furnishing labor and materials for Wanship and Gateway Power Plants and Switchyards, Weber Basin Project, Utah. Location near Wanship, Utah in Summit County; and near Ogden, Utah in Morgan County. Principal items are 36,000 cu. yds. excavation; 1,635 cu. yds. concrete; furnishing and installing penstocks; and other work. Completion time 520 days. For particulars, address Bureau of Reclamation, P. O. Box 387, Ogden, Utah; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: October 22, 1956

Construction of Sewerage System

Sealed proposals will be received by the undersigned at BOROUGH COUNCIL CHAMBERS, SLATINGTON HOSE COMPANY NO. 1, 401 WEST CHURCH STREET, SLATINGTON, LEHIGH COUNTY, PENNSYLVANIA until 6:30 P.M. Eastern Standard Time, October 22, 1956, at which place and time, or shortly thereafter they will be publicly opened and read, and shall cover furnishing all necessary labor, materials and equipment, and performing all work for the Contracts noted below. Separate proposals will be received upon five (5) parts of the project as hereinafter indicated. Each proposal shall be accompanied by a certified check or bid bond in an amount not less than ten percent of the bid total, all in accordance with the provisions contained in the Contract Documents.

Copies of the Contract Documents, including Drawings and Specifications, may be obtained only from the office of LEONARD M. FRAIVILLIG COMPANY, ENGINEERS, BETHLEHEM TRUST BUILDING, CORNER OF BROAD AND MAIN STREETS, BETHLEHEM, PENNSYLVANIA, at which place copies will also be on hand for inspection by prospective bidders, and material and equipment suppliers. Not more than two (2) sets of a particular Contract will be allowed to any prospective bidder.

Checks for all deposits shall be drawn payable to LEONARD M. FRAIVILLIG COMPANY and sent to their address as indicated above. Deposit for each set requested shall be as follows:

Contract One—CONSTRUCTION OF A SEWERAGE SYSTEM $50.00
Contract Two—GENERAL CONSTRUCTION OF A SEWAGE TREATMENT PLANT, PUMPING STATION, FORCE MAIN, AND OUTFALL SEWER $30.00
Contract Three—PLUMBING WORK IN CONNECTION WITH CONSTRUCTION OF A SEWAGE TREATMENT PLANT AND PUMPING STATION $20.00
Contract Four—HEATING WORK IN CONNECTION WITH CONSTRUCTION OF A SEWAGE TREATMENT PLANT AND PUMPING STATION $20.00
Contract Five—ELECTRICAL WORK IN CONNECTION WITH CONSTRUCTION OF A SEWAGE TREATMENT PLANT AND PUMPING STATION $20.00

Full refund will be made only to actual bidders on the five (5) Contracts noted above, for return of one (1) set, no more, of a particular Contract in good condition within fifteen (15) calendar days after closing date for receipt of bids; refund for return of all other sets in good condition within the same period, will be fifty (50) percent of deposit. No refund of deposit will be made for Contract Documents returned later than fifteen (15) calendar days after date of receipt of bids.

Copies of the Contract Documents, including Drawings and Specifications will be on file, for inspection purposes only, at Citizens National Bank, 506 Main Street, Slatington, Pennsylvania, and at the office of Gannett Fleming Corddry and Carpenter, Inc., Engineers, 600 North Second Street, Harrisburg, Pennsylvania; but none can be obtained from these last two above mentioned places.

Slatington Borough Authority
Slatington
Lehigh County
Pennsylvania

Leonard M. Fraivillig Company
Engineers
Bethlehem, Pennsylvania

U. S. Government

General Services Administration, Public Buildings Service: Sealed Bids for Cleaning and Painting, etc. of 8" steel pipe at the National Guard Armory, Morris Township, N. J., will be received in triplicate until 2:00 P.M., EDST, October 2, 1956 and then publicly opened in the Bid Room of the Business Service Center, 250 Hudson Street, New York 13, New York. Specifications, etc., may be obtained from the Business Service Center; from the Custodian of the Building.

OFFICIAL PROPOSALS

Bids: November 1, 1956

New York State Thruway Authority

NOTICE TO BIDDERS

The New York State Thruway Authority invites proposals and quotations for the furnishing and installation of AUTOMATIC TOLL COLLECTION EQUIPMENT for barrier toll stations on the New York State Thruway. Full information on the Automatic Toll Collection System is available and may be obtained from the office of the Director of Purchasing, New York State Thruway Authority, Delaware Avenue Plaza, Elsmere, New York (Mailing Address: P. O. Box 189, Albany, New York).

Each proposal should be enclosed in a sealed envelope and the words "Automatic Toll Collection Equipment" should be shown, for identification, on the face of the envelope, and sealed envelope should be directed to the Authority at the above mailing address. Sealed proposals will be received until 11:00 A. M., E. S. T. on November 1, 1956 when they will be publicly opened and read. The Authority reserves the right to reject any or all proposals.

HOLDEN A. EVANS, JR.
General Manager

OFFICIAL PROPOSALS

Bids: Prequalification Date: October 11, 1956

Board of Education—Bureau of Construction, Notice Re: Prequalification Forms for Contractors

NOTICE IS HEREBY GIVEN THAT THE Director, Bureau of Construction, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, New York, will receive applications for prequalification of bidders, from contractors who may wish to submit bids for the proposed hereinafter specified contracts, as follows:

For General Construction, Plumbing and Drainage, Heating & Ventilating, Electrical Work and Lighting Fixtures—Public School 192, Addition & Modernization, 136th St., East of Broadway, Manhattan.

Prequalification application forms will have to be secured and must be submitted to the Director, Bureau of Construction Office, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, New York.

Bids when advertised will be received from prequalified bidders only.

The time for submitting prequalification application forms for the above contracts will expire on Thursday, October 11, 1956.

WILLIAM H. CORREALE
Director
Dated: September 18, 1956

EMPLOYMENT OPPORTUNITIES

(Continued on pages 116-119)

REPLIES (Box No.): Address to office nearest you c/o This publication. Classified Adv. Div.
New York: P. O. Box 12 (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Engineers and Draftsmen. Structural and mechanical for building construction work in consulting engineers office in Hartford, Conn. area. Address reply to P-2873, Engineering News-Record.

General Superintendent, qualified engineer for Kansas contractor, must have proven experience on industrial buildings & gov't. projects. Salary open. P-2754, Engineering News-Record.

Large Midwest Consulting firm has opening for experienced sewage and industrial waste treatment designer. Excellent opportunity for man of proven ability with large well established organization. Inexperienced designer need not apply. State full experience record and salary range in first reply. Travel and subsistence for interview will be considered. P-2843, Engineering News-Record.

Wanted: Executive Engineer for Florida construction firm, capable of estimating and managing all phases of road, bridge, and underground construction. Satisfactory salary with bonus. Must have executive management experience as well as field management. P-2864, Engineering News-Record.

General Supt. Engr. for Sewers and water lines must be well experienced in supervisory installation and estimating, coordinating inside and outside. Old established Company. Resume held in confidence. Columbia Constr. Co. Inc., 2108 Columbia Ave., Indianapolis 2, Ind., WAlnut 3-1567, Mr. Farrer.

Architectural Specification Writer to prepare contract specifications. Gamble, Pownall & Gilroy, Box 2165, Ft. Lauderdale, Fla.

Civil Engineers — Immediate vacancies for beginners and experienced Civil Engineers. Work related to flood control projects and hydrologic studies. Openings in Chicago and Springfield Illinois. Salary range $400-$600. Reply stating experience, location preferred and salary desired. Box P-2948 Engineering News-Record.

Heavy Equipment Engineer with at least 2 to 3 years of Mechanical Engineering Schooling for work in the South. Full information and references in first letter requested. Reply P-2917, Engineering News-Record.

Materials Engineer for work in Midwest. Must know concrete paving, some soils, some asphalt paving. Degree required. Registration desired. $9-10,000. Reply Box P-2888, Engineering News-Record.

WANTED
WALKER & SHIFTERS
ON SOFT GROUND TUNNEL WORK
Location—Midwest

P-3065, Engineering News-Record, Classified Adv. Div., P. O. Box 12, New York 36, N. Y.

POSITIONS VACANT

Engineers experienced in design and supervision of construction to work as resident engineers or prepare plans for water and sewer systems; also, architects for preparation of plans for general building work. State experience, age, salary required, when can report, and give references. Reply P-2827, Engineering News-Record.

Designers—Steel, Concrete, Electrical Piping, Air-Cond., Power Plants & Industrial Bldgs. Marbarry Corp., 120 Greenwich St., N.Y.C. Rector 2-3749.

Draftsman—Civil Engineering Projects. Permanent. Benefits. Salary open. Send resume of education and experience to P-2960, Engineering News-Record.

Wanted: Registered Professional Engineer specializing in Soil Mechanics, capable of taking complete charge of Soil Mechanics office performing soil exploration, laboratory testing, and writing engineering reports with respect to foundation requirements. Experience necessary. Some experience in structural design of foundations preferable but not essential. Good salary commensurate with qualifications. State qualifications in full, experience resume, references and salary requirements. P-2945, Engineering News-Record.

Civil Engineers, Designers, Draftsmen experienced in the design of sewers, pumping stations, sewage treatment plants, water supply systems, structural and hydraulic design, hydraulic computations, specs. O'Brien & Gere 100 E. Genesee St., Syracuse, N. Y.

Position as structural engineer, age 30-40, offered by Portland Cement Association, 33 W. Grand Ave., Chicago. Opportunities for engineer interested in theory and design of advanced uses of reinforced concrete.

Land Surveyor!—for old established Chicago firm. Permanent position. Salary $6000-$8000 per year. Give experience in first letter. P-2916, Engineering News-Record.

(Continued on following page)

EMPLOYMENT OPPORTUNITIES

DISPLAYED

The advertising rate is $28.25 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

An advertising inch is measured ⅞" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

—RATES—

UNDISPLAYED

$2.10 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.
Position Wanted ads take ½ of above rate.
Box Numbers—count as 1 line.
Discount of 10% if full payment is made in advance for 4 consecutive insertions.
Not subject to Agency Commission.

Send NEW ADS and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD
P. O. Box 12 N. Y. 36, N. Y. October 11th issue closes September 28th

STRUCTURAL & CIVIL ENGINEERS

to work in our Boston Office

METCALF & EDDY

1300 Statler Bldg., Boston

Address inquiries to Mr. Murdough

POSITIONS VACANT

(Continued from preceding page)

Wanted: Senior Structural Designing Engineer. Permanent position with industrial company in upper New York State. Excellent salary and opportunity based on ability. Fine living conditions for family. P-3006, Engineering News-Record.

Architectural draftsman for office with school and church jobs to plan. Experience preferred in preliminary layout, presentation drawings and construction drawings. Permanent position for qualified man. Write P. O. Box 36 Lancaster, Ohio, giving qualifications, experience and salary, or call Lancaster 2243-W for appointment.

Soils Engineer—Civil or mechanical engineering graduate preferred. Training in soil mechanics desirable. Excellent opportunity with internationally known construction firm. Submit complete resume including salary desired. P-3040, Engineering News-Record.

Highways Engineers, Designers, Draftsmen for office work in the vicinity of Louisville, Ky., on highways, expressways and similar civil works. Permanent positions for qualified experienced engineers or recent graduates—with a growing firm of established consulting engineers — Opportunity for advancement based on merit—Liberal transportation and moving allowances. Suburban living available close to office. Liberal Employee Benefits—Immediate openings—Beginning Salary Commensurate with Qualifications. Please write fully to Box P-3056, Engineering News-Record.

Engineer-Estimator for General Contractor— able to estimate heavy construction, keep progress and cost records. Project in the Pittsburgh area. Good bonus arrangement for the right man. P-3048, Engineering News-Record.

POSITIONS WANTED

Construction or project manager, 48, engineering background. 30 years experience all phases heavy construction roads, bridges, hydroelectric projects, steel and concrete structures. Proven administrator and producer. Desires short term assignment. Excellent pinch hitting during sick leave, vacations or where job needs a boost. Would consider permanent connection. Available October 15. Domestic or foreign. PW-3002, Engineering News-Record.

Structural Engr., 65, life-time experience in struct. steel and reinf. concr. industrial design, etc., wants position in town or small city. Hyde, 5581 Bluehill, Detroit, 24, Michigan.

HYDRAULIC DESIGN ENGINEER

With 5 to 10 years' experience in Water Supply and Sewage Works, including design of treatment units, hydraulics, hydrology, structures, piping and the equipment involved in such work. We can offer the man meeting these qualifications an adequate salary and promising future with a prominent New York firm.

P-2908, Engineering News-Record
Class. Adv. Div. P.O. Box 12, N.Y. 36, N.Y.

POSITIONS WANTED

C.E. and M.E. in power plant engineering including 28 years of diversified experience in heavy and light construction, wishes new connection as a construction manager, general superintendent, project manager, or engineer, foreign work preferred with mild climate. Experience in airfields, water distribution, disposal plants, roads, railroads etc. Now employed in Spain. Available 60 days. PW-3060, Engineering News-Record.

Mining Engineer — Production — Exploration — Sales Promotion. Background includes management of surface and dredging operations; geologic exploration and evaluation of non-ferrous deposits including several years in South America; sales, sales promotion and product development of earth moving and drilling equipment, and explosives. Experienced in United States Government contracts. PW-2942, Engineering News-Record.

Mechanical Engineer, eighteen (18) years experience in all phases of mechanical work, usually associated with large consultting engineering offices in New York City, including petroleum piers, oil pipelines, tank forms, airports, tunnels, roads, buildings, etc. Position desired should be of responsibility level, involving reports, design, specifications, bid analysis, supervision, etc., New York or vicinity, Box PW-2944, Engineering News-Record.

Dirt and Construction Superintendent, wanting job. 28 years experience, sober, honest and capable. Available now. PW-2955, Engineering News-Record.

Civil Engineer 20 yrs. experience mainly water and sewerage. Complete supervision design some supervision construction. Available now. Please specify duties and approx. earnings first reply. PW-2852, Engineering News-Record.

Accountant experience office manager in heavy construction, dams and air field buildings and under ground systems. College major accounting special course industrial management, age 45, married, wife and I go anywhere. PW-2897, Engineering News-Record.

Highway engr. twelve years foreign service approaching retirement status seeking connection in consulting capacity—address—PW-2920, Engineering News-Record.

Architect Steel Superintendent or owners representative. Experienced on Public & Industrial buildings. Estimating, expediting & cost control. Available immediately anywhere in U. S. PW-3053, Engineering News-Record.

POSITIONS WANTED

Writer—Engineer seeks solid connection, degrees, experience publications. Salary secondary to right firm. PW-2766, Engineering News-Record.

Field Accountant cost, payrolls, field purchasing & expediting. Available immediately anywhere in U. S. PW-3054, Engineering News-Record.

Prestress Conc. Executive available. Employed, manfg. double tees beams columns piling & bridge sections. Graduate Arch. college: Age early 50s Sales Contacts N Y State. 7 years precast 3 years pretensioned. Interested in managing adequate set up only. Will relocate. PW-3055, Engineering News-Record.

Project Mgr.—General Superintendent—Engineering background—age 44 yrs. with 20 years experience in heavy construction. Industrial with some municipal work. Seeks permanent connection. Prefer South or Southwestern Area but will consider others. Please describe position and state min. salary and benefits. PW-3024, Engineering News-Record.

German graduated Structural Engineer, 58 year, experienced in computations, designs and estimating of bridges, highways and industrial buildings in structural steel and reinf. concrete, incl. prestressed concr. (seven years exper. in Canada and USA), at present employed with a well known German contractors firm, desires position as engineer in USA. Write to Michael Scharidt, C. E., (22a) NEUSS/Rh., Muensterpl. 4-6, Germany.

Construction or Maintenance Superintendent (52) Bulk Oil or Gasoline Storage; familiar with the below ground hydraulic; pump and tank, or gravity systems. Army or Navy specifications. Interested in domestic or foreign projects. PW-3019, Engineering News-Record.

Construction Engineer to supervise the construction of School buildings or large industrial plants. Have had 15 years experience in supervising work of this kind. Available the First of October. PW-3025, Engineering News-Record.

Civil EIT, 31, experience asphalt paving design and inspection, surveying, drafting, building construction estimating, materials procurement. Interested in teaching, foreign assignment or municipal engineering. PW-3027, Engineering News-Record.

Const. Supt. BSCE, age 33. Background bldgs., dams, schools, PW-3042, Engineering News-Record.

Asst. Supt. or Supt. on small job. 21 years exp. on varied types of work. All types conc. structures a specialty. Engineering background. Florida Prev. Must be permanent. PW-3041, Engineering News-Record.

Construction Engineer Superintendent. Age 43 BSCE. 20 years office and field experience: roads, airfields, waterworks, sewage, bridge and industrial construction; soils testing. Available for owner or contractor Eastern States. PW-3008, Engineering News-Record.

40 Civ. Struct. Mech. elect. estimating architectural eng's & draftsmen are being transferred and will entertain offers of better positions at this time. Employees of Technical Eng. Division, Miss. Riv. Comm., Vicksburg, Mississippi.

PART-TIME WORK WANTED

Group of Engrs., P.E., 15 yrs. exp., Ind. Power Systems, waterworks-pumping, distribution purification-design, maintenance, and operation. PTWW-2996, Engineering News-Record.

ENGINEERS

Are you worth up to

$10,000 A YEAR?

Important permanent positions, paying from $6,500 to $10,000 a year with unusual future opportunity, have been created by the expansion program of our large, long-established engineering and construction firm. We need qualified engineers, designers and draftsmen experienced in structural, concrete, mechanical and piping design. Engineering offices are in several major American cities and Canada. Excellent working conditions. Generous company benefits. Our employees know of this ad.

Investigate this opportunity. Write today, giving age, education and experience. Your inquiry will be kept strictly confidential and will be answered promptly.

P-2652, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

HIGHWAY ENGINEERS
DESIGNERS
DRAFTSMEN

Drainage Engineers

FOR OFFICE WORK IN ST. LOUIS ON HIGHWAYS EXPRESSWAYS AND ASSOCIATED CIVIL WORKS

- *Permanent employment for qualified men*
- *Ample opportunity for advancement based on merit*
- *Generous transportation & moving allowances*

Plus Employee Benefit and Retirement Plan, Paid Vacations, Holidays, Sick Leave. Blue Cross available.

PLEASE WRITE FULLY TO OR INQUIRE AT

SVERDRUP & PARCEL ENGINEERING CO.
1134 LOCUST ST. ST. LOUIS 1, MO.

ELECTRICAL SERVICE ENGINEER

To service Overhead Electric Cranes and Electric Mining Shovels.

Must be willing to relocate in Milwaukee and travel.

E.E. degree or equivalent is required as well as ability to make important service decisions.

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P-3041, Engineering News-Record,
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P-3038, Engineering News-Record
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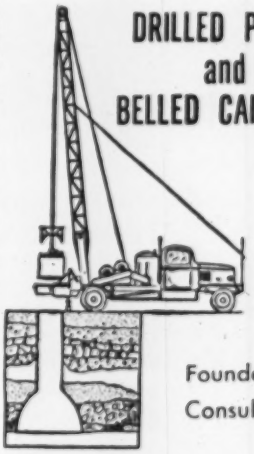

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Construction at Suez

THE REAL PROBLEM, which Egypt has to solve as a result of her seizure of the Suez Canal, is that of planning and paying for the construction necessary to keep the waterway attractive to traffic and capable of serving it. By comparison, the problem of getting experienced pilots is just a passing worry.

The hard facts are that the Suez Canal is not yet completed, and may require as much as a billion dollars of additional construction over the next 15 years. New construction has been practically continuous over the last 50 years. The eighth program, now at the halfway mark, involves 90 million cu yd of excavation and dredging to widen the canal by 30 ft, deepen it by 2 ft and provide 6 miles of new bypass canal. This will raise the nominal capacity of the canal from 40 to 55 ships a day.

But the long range plans of the canal company had envisioned 180 ships a day! This means a truly big canal because otherwise, as at present, ship speeds of over 8 knots cause dangerous bank erosion. Moreover, to attain a given speed in a narrow channel requires vastly more power than in open water, and the big tankers of the future will want to use their power to transport oil and not to transit a narrow canal.

The Suez Canal will be no asset to anyone unless it can attract traffic. So far, in its half century of existence, some 300 million cu yd of construction excavation and 300 million cu yd of maintenance dredging have been required to keep it attractive. A task of even greater dimensions looms in the future. Construction is the real key to success at Suez.

A Century of Steelmaking

A PROPHETIC ANNOUNCEMENT in the August, 1856, issue of The Engineer (London) called attention to a scientific paper published elsewhere in the issue.

". . . Mr. Bessemer's new discovery . . . ," the announcement read in part, "if it proves to be all that is represented (and at present there is little reason for doubt), promises completely to revolutionise iron manufacture as at present conducted."

Thus did the magazine cautiously indorse a discovery that indeed proved to be all that was represented. Today, a century after Bessemer built his pioneer blast furnace, the world produces well above a quarter-billion tons of steel a year, much of it in blast furnaces (though Bessemer's method is no longer the leading steelmaking process).

And now, as though to mark the centennial of the blast furnace, the British Iron and Steel Research Association has released a progress report on an experimental method of steelmaking that is said to turn Bessemer's process "almost inside out." Liquid iron ore is sprayed through powdered coal and oxygen, and the result is a recognizable form of steel. The new method cuts out a number of intermediate steps and could herald significant changes in steel manufacture.

Of course, there is little likelihood of an overnight revolution in steelmaking, and the new process, which is still under investigation and development, may prove altogether unimportant commercially. But, coming as it does on the centennary of the Bessemer process, it affords an opportunity to recall that many of our great technological advances date from small, uncertain beginnings. Few, therefore, are too small or uncertain to be ignored.

Urban Roads Are Costly

A NEW HIGHWAY linking the New Jersey Turnpike at Newark Airport with the Holland Tunnel into New York City was opened on Sept. 15. Only a little over eight miles long, it cost $120 million, making it one of the costliest stretches of road ever built; it is not quite the most expensive since Boston's five-mile Central Artery carries a $110 million price tag. The striking fact is that the money required for either of these expressways would pay for between 100 and 200 miles of modern superhighway in open country.

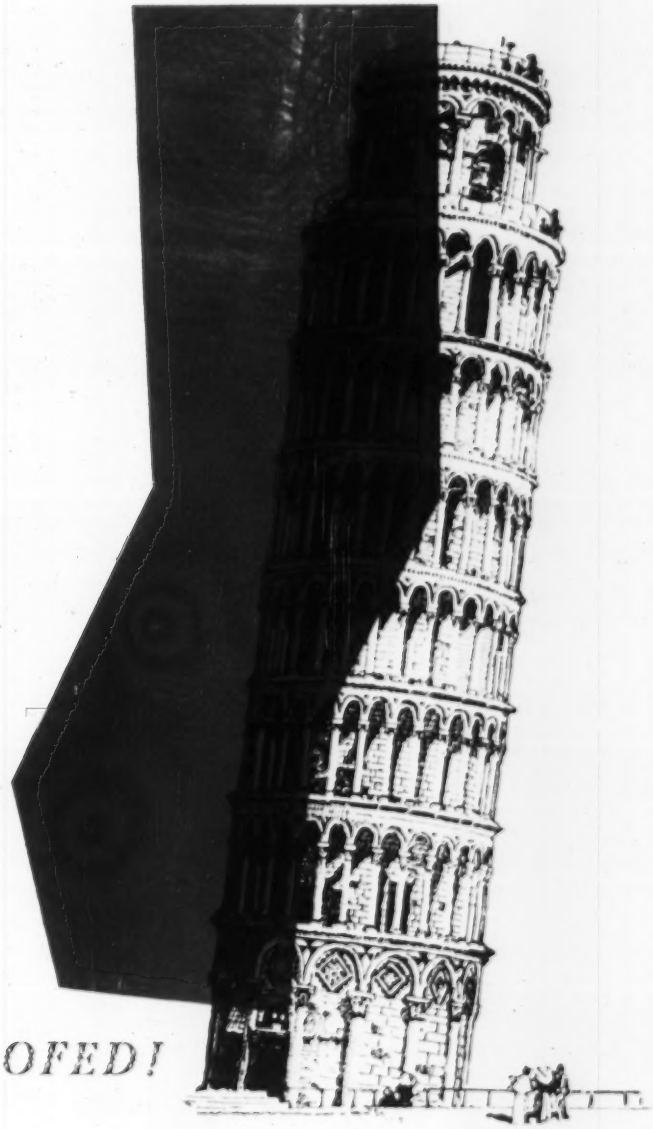
Urban highways, it is clear, are truly expensive. And yet this is not a new phenomenon. In fact, this new section of the Jersey Turnpike is noteworthy for being the second high-priced link between the Holland Tunnel and the state's trunk highways near Newark.

In 1933 the New Jersey Highway Department opened the Pulaski Skyway, a high-level crossing of the New Jersey Meadows and the Hackensack and Passaic Rivers, which, with other viaduct and a deep open cut, extends seven miles westward from the Holland Tunnel. Its cost was something near $30 million, and $4 million a mile was quite as startling in 1933 as $15 million is today.

Actually, of course, such expenditures, even in these times, are not committed lightly. This latest extension of the New Jersey Turnpike was proposed when the turnpike was being built, but its high cost could not be justified by the anticipated revenue. It was the spectacular success of the turnpike in developing traffic far in excess of the engineers' estimates that completely changed the picture.

Whether this costly extension ever will pay its own way remains to be seen. An unusually large volume of traffic will undoubtedly be necessary. But, even though this volume may not prove sufficient, the better service provided would appear to justify spreading part of the carrying charges over the whole turnpike, just as the cost of building the Pulaski Skyway as a free road was spread over the entire state highway system.

Urban roads are costly, but they are needed so badly that ways must be found to build them. On two projects three decades apart, New Jersey has proved it can be done.



SOMEBODY GOOFED!

Only by a freak of fortune does the leaning tower of Pisa still stand. A faulty foundation was not apparent until the structure was three stories high. It is believed the architects were then forced to compensate by adding weight to the opposite side to save the building.

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